DOCUMENT RESUME

ED 288 957 CE 047 971

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TITLE Roadsigns from Research. BASICS: Bridging Vocational and Academic Skills.
INSTITUTION Ohio State Univ., Columbus. National Center for Research in Vocational Education.
SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE 87
GRANT G008620030
NOTE 73p.; For related documents, see ED 252 701-702, ED 252 737-739, ED 257 995, ED 266 264, ED 276 873, and CE 047 969-978.
AVAILABLE FROM National Center Publications, Box SP, National Center for Research in Vocational Education, 1960 Kenny Road, Columbus, OH 43210-1090 (Order No. SP300AD--$14.95; complete BASICS set, SP300--$198.00).
PUB TYPE Information Analyses (070) -- Guides - Non-Classroom Use (055)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Academic Education; *Basic Skills; Business; Cognitive Style; Dropout Prevention; *Dropouts; *Educational Research; Employer Attitudes; Faculty Development; Industry; Inservice Teacher Education; *Integrated Activities; Integrated Curriculum; Secondary Education; *Teaching Styles; *Vocational Education; Vocational Education Teachers

ABSTRACT

This document responds to the need for integration of basic skills into vocational education by providing a summary of research findings, implications, and practical suggestions for teachers. The six sections and four complementary posters are intended as tools for staff development of teachers engaged in teaching basic skills. Sections can also be used separately as informational handouts for individual or group instruction at a workshop and mailouts to motivate participation in professional growth activities. Each section is organized by the kinds of questions that teachers have about students' difficulties with basic skills and teachers' difficulty in addressing these problems. Sections 1-3 discuss dropouts--an assessment of the problem as it relates to basic skill deficiencies; the impact of personal, family, and school factors on dropout-prone youth; and what happens to dropouts. Section 4 clarifies the business and industry perspective on the importance of a work force competent in basic skills. Section 5 summarizes basic skill problems prevalent among special populations. Section 6 summarizes the implications of both learning and teaching styles for basic skills acquisition. Appendixes provide information on guides and modules that provide assistance to administrators, counselors, and teachers as they promote a joint effort to strengthen basic skills. (YLB)

Basics
Bridging Vocational and Academic Skills

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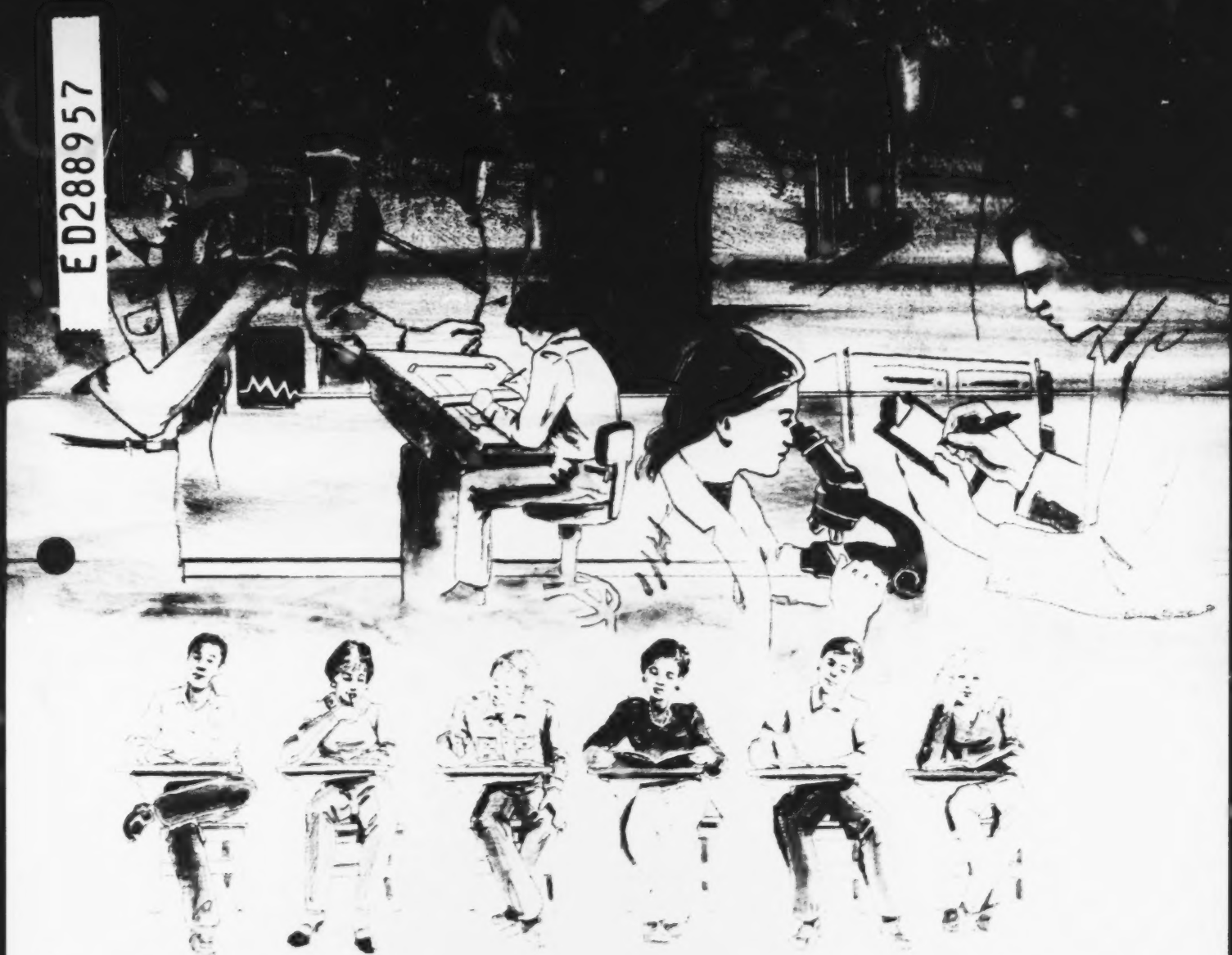

Roadsigns from Research

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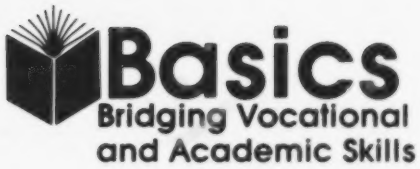

Roadsigns from Research

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1987

FUNDING INFORMATION

Project Title:	National Center for Research in Vocational Education, Applied Research and Development
Grant Number:	G008620030
Project Number:	051BH60001A
Act under Which Funds Administered:	Carl D. Perkins Vocational Education Act, P.L. 98-524, 1984
Source of Grant:	Office of Vocational and Adult Education U.S. Department of Education Washington, D.C. 20202
Grantee:	The National Center for Research in Vocational Education The Ohio State University Columbus, Ohio 43210-1090
Acting Executive Director:	Chester K. Hansen
Disclaimer:	This publication was prepared pursuant to a grant with the Office of Vocational and Adult Education, U.S. Department of Education. Grantees undertaking such projects under government sponsorship are encouraged to express freely their judgment in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official U.S. Department of Education position or policy.
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Black line master of dropout poster

Black line master of business and industry poster

Black line master of special populations poster

Black line master of learning and teaching styles poster

FOREWORD

Converging factors point to a need to look for new pathways to vocational education excellence: the public's increased expectations regarding academic outcomes of education, heightened by a number of national reports; increased graduation requirements and declining vocational enrollments in many states; the emphasis in the Perkins Act on the need for strengthening academic foundations; and business and industry requests that entry-level employees have a more thorough knowledge of the basic academics they will need to apply in their vocational fields. Those concerned agree that students need to have stronger basic academic skills as they leave secondary education programs—stronger academic skills for graduation, for work, and for life.

The National Center has sponsored diverse efforts dealing with basic skills in vocational education, from research to development to dissemination. Much has been learned about vocational students' basic skills learning problems. In order to make connections between research and practice, The National Center has, through synthesis and development, prepared an integrated package for teacher use, reinforcing this information with practical applications gleaned from teachers' repertoires across the nation. The products in the package are aimed toward enabling vocational and academic teachers to strengthen the academic component of vocational programs through joint effort.

The **BASICS** package provides resources in five focus areas: research findings, teaching techniques, instructional materials, instructional strategies, and support roles. The resources are organized in three looseleaf guidebooks for flexible use. An accompanying videotape provides an orientation to the topic and to the package.

The Bridger's Guide orients administrators, counselors, teachers, and employers to the purpose and application of **BASICS;** individual roles are explained, resources identified, and implementation guidelines and strategies outlined in workshop format. Individual components to the guide are as follows:

- *Implementation Guide* describes the philosophy of **BASICS** and provides guidelines for implementing the program.
- *Support Roles for Basic Skills* describes the role of administrators, counselors, employers, and families in a program for improving basic skills.
- *Primer of Exemplary Strategies* provides teachers with examples of other teachers' successful efforts and diverse approaches.
- *Roadsigns from Research* (posters and brochures) highlights key research findings of interest to those involved in strengthening basic skills.

Targeted Teaching Techniques provides vocational and academic teachers with assessment, planning, and management tools to improve students' basic skills. Individual components are as follows:

- *Technique for Management: Time for Learning* lays foundations for more effective basic skills instruction through studying the use of classroom time.

- *Technique for Remediation: Peer Tutoring* discusses the planning, implementation, and evaluation of peer tutoring programs to strengthen students' basic skills.
- *Technique for Computer Use: Software Evaluation* describes a procedure for joint evaluation of educational software for basic skills instruction.
- *Technique for Individualization: The Academic Development Plan* guides school staff through a systematic identification of individual student needs and steps to meet those needs.
- *Techniques for Joint Effort: The Vocational-Academic Approach* describes teaching techniques that vocational and academic teachers can use jointly to improve students' basic skills.

Developing an Instructional Program provides teachers with practical and theoretical information on the development or selection of appropriate applied basic skills instructional materials. Individual components are as follows:

- *Instructional Materials Development* discusses the prerequisites of materials development, alternative curriculum types, and guidelines for materials development and review.
- *Supplemental Instructional Resources* identifies sources of basic skills instructional materials for use with vocational students.
- *Instructional Assistance in Specific Basic Skills* prepares vocational teachers to help students gain reading, writing, oral communication, and math skills.

The National Center wishes to acknowledge the leadership provided to this effort by Dr. Robert E. Taylor, recently retired Executive Director. Appreciation is extended to the following individuals who served as a panel of experts to assist staff in planning strategy and recommending document content: Eugene Bottoms, Consultant to the Southern Association of Colleges and Schools; Michele Brown, Vocational Supervisor, Idaho Falls School District, ID; Alton Crews, Superintendent, Gwinnett County Public Schools, GA; Roger Faulkner, Instructor-Coordinator, Great Oaks Joint Vocational School District, OH; and Darrell Parks, Director, Division of Vocational and Career Education. Appreciation also is extended to Sonia M. Price, Associate Director for Program Services, Ohio Department of Education, Division of Vocational and Career Education; and Kenneth B. Hoyt; University Distinguished Professor, College of Education, Kansas State University—as well as the following individuals—for their review of the section on dropouts in this document:

School Administrators, Supervisors, Consultants, and Coordinators

Vince Roessner, Lois Mascorella, and Ellen Young of Ashtabula County Joint Vocational School, Jefferson, OH

Clifford Migal and Mary Helen Steinauer of Great Oaks Joint Vocational S. and Placement Personnel

Richard Poe, Chapmen A/V Division of Holmes High School, Covington, KY

Teresa Davis, Donaldson Career Center, Greenville, Sc

Richard Campbell, Monongalia County Vocational-Technical Center, Morgantown, WV

Teachers and Prospective Teachers

Judy Daniels, Ashtabula County Joint Vocational School, Jefferson, Oh

Buster Hilmandolar and Diane Wilburn, Chapman A/V Division of Holmes High School, Covington, KY

Carol Charves, Greene Vocational School, Xenia, OH

Billy Smith, Gwinnett Vocational Education Center at Oakland, Lawrenceville, GA

Geneva Jackson, Marion-Franklin High School, Columbus, OH

Mark Williams, Pickaway-Ross Joint Vocational School, Chillicothe, OH

Marsha Shook, Rio Grande College, Rio Grande, OH (Summer Intern, Ohio Department of Education)

James Otey, Jim Riley, Julie Roeth, Orville Tussing, and Barry Stebbins of Upper Valley Joint Vocational School, Piqua, OH

Agnes Williams, Wethersfield Public Schools, Wethersfield, Ct

Students

Beverly McGinnis, Berkmar High School, Lilburn, GA

Sheryl Wheeler, North Gwinnett High School, Suwanee, GA

Roger W. Bridgeman, Paul Cantrell, Robin Clemons, and Mike Schaffer, Upper Valley Joint Vocational School, Piqua, OH

Holly Ingledue, Worthington High School, Worthington, OH

Parents

Thomas and Joanne Ingledue, Worthington, OH

For their review of other sections in this document, appreciation is extended as well to the following persons:

Robert Armstrong, Pickaway-Ross Joint Vocational School, Chillicothe, OH

Don Plotts, Pioneer Joint Vocational School, Selby, OH

Robert Bennett, Consultant, Gahanna, OH

Howard Henderson, Process Associates, Mansfield, OH

Lynn Salisbury, Oakland Vocational Center, St. Cloud, MN

Jerry Wedlund, St. Cloud University, St. Cloud, MN

Wesley Budke, Roy Butler, Ida Halasz, Susan Imel, Kathleen Kopp, and Gwendolyn Rippey of the National Center

Special recognition is due the following National Center staff who played major individual roles in the development of the **BASICS** package: Richard J. Miguel, Associate Director for Applied Research and Development, and Michael R. Crowe, Project Director, for leadership and direction of the project; Sandra G. Pritz, Senior Program Associate, Judith A. Sechler, Program Associate, and June Veach, Graduate Research Associate, for synthesizing and developing the documents; and Deborah Black for word processing the documents. Appreciation is extended to The National Center editorial and media services personnel for editorial review, graphics, and production of the documents.

Chester K. Hansen
Acting Executive Director
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in Vocational Education

EXECUTIVE SUMMARY

Roadsigns from Research responds to the need for integration of basic skills into vocational education by providing a summary of research findings, implications, and practical suggestions for teachers. This summary has taken the shape of six compact and detachable sections with four complementary poster designs in order to maximize usability by teachers as they promote basic skill acquisition.

The document covers four major topics of significance for teachers who are concerned about students' problems with basic skills: dropouts, business/industry, special populations, and learning/-teaching styles. Research drawn from work by the National Center and others suggests that these topics provide much of the understanding needed to address basic skills prolbems effectively.

Dropouts are discussed in the first three sections. The first section provides an assessment of the dropout problem as it relates to basic skills deficiencies. Statistics are cited to shed light on groups with a high dropout rate who also tend to have problems with basic skills. The second section summarizes the impact of personal, family, and school factors on dropout-prone youth through statistics and an interpretation of their simultaneous contribution to basic skills deficiencies. The third section summarizes what tends to happen to dropouts with emphasis on pregnancy, employment, crime, and health. It also discusses the economic and educational tolls on others caused by students' dropping out. Finally, the promise that vocational education holds for dropout prevention is discussed and specific approaches to basic skills instruction are outlined.

The fourth section clarifies the perspective of business and industry on the importance that the American work force be competent in basic skills. Basic skills problems that companies encounter are cited as well as the entry-level skills that employers look for. Suggestions conclude the section that can assist teachers in meeting companies' basic skill requirement.

The fifth section summarizes the basic skill problems that are prevalent among special populations, as well as the factors that make these problems difficult to solve. Changes are recommended that can make teachers more effective in helping special population students overcome basic skill deficiencies.

The last section summarizes the implications of both learning and teaching styles for basic skills acquisition. Several suggestions are given on how teachers can use information about learning/-teaching styles to reach students with basic skills problems for whom traditional methods may be inadequate. Two brief hands-on experiences for the reader are incorporated to emphasize the impact of active learning.

Introduction

The sections in *Roadsigns from Research* and the complementary posters are intended as tools for staff development of teachers engaged in teaching basic skills. The sections can be used separately as informational handouts for individual or group instruction at a workshop, as well as mailouts to motivate participation in professional growth activities.

Each of the sections is organized by the kinds of questions that teachers have about students' difficulty with basic skills and teachers' difficulty in addressing these problems. Recognizing that teachers' time is limited, these sections condense information in a tightly organized, readable format and emphasize practical suggestions. These suggestions give hope that basic skills problems can be addressed effectively. The posters communicate this same optimism and may be used as appropriately in the school classroom as in teaching workshops.

Roadsigns from Research, like the other package products, connects basic skills to information and techniques relevant for vocational teachers as well as for joint efforts in which academic subject matter teachers and vocational education teachers collaborate on basic skills instruction. The summary of research findings is conducive to triggering a dialogue among both groups of teachers to facilitate their learning and planning together. Supervisors, principals, parents, and others in the community may also find one or more of the sections and posters meaningful in their effort to understand the basic skills problems at the heart of much current criticism of our nation's schools. Teachers and counselors may also draw information from *Roadsigns from Research* to share with students.

National Center research findings—as well as other current literature—were analyzed and synthesized to compile the sections that relate basic skills to dropouts, business/industry views, special populations, and learning/teaching styles. Each section was critically reviewed in order to make the research information and suggestions as relevant and practical as possible for teachers. Myth/fact statements at the beginning of each section provide the reader an advanced organizer for the topics that follow. For ease of reading, a list of references appears at the end of each section rather than integrated throughout.

Roadsigns from Research is designed to complement other sources in the **BASICS** package. In particular, it relates to the *Targeted Teaching Techniques* by providing background and support for recommended procedures. *Roadsigns from Research* also relates to *Developing an Instructional Program* by augmenting the theoretical base with detailed information and rationale. By combining **BASICS** materials, teachers can gain a concrete sense of direction to implement basic skills instruction in vocational education more effectively.

Basics
Bridging Vocational and Academic Skills

THE NATIONAL CENTER FOR RESEARCH IN VOCATIONAL EDUCATION
THE OHIO STATE UNIVERSITY

Roadsigns From Research: Dropouts

Perils and Profiles

Myth or Fact?

____ The dropout problem is more serious today than in the past even though the rate is lower.

____ Students who lack basic skills are the ones who drop out of school.

Human history becomes more and more a race between education and catastrophe.
H.G. Wells

How Near Are We To Catastrophe?

We *are* in a race! A race to prevent disaster. Wells, the famous science-fiction writer and cultural prophet, realized the danger of catastrophe in 1920. Our government and many schools do, today.

Who's in danger? Certainly any student who is thinking about dropping out. Schools and teachers, who are held accountable for dropouts, are in danger, too. But the catastrophe lies in the fact that our whole society is at risk.

Trends: The dropout rate in Wells' lifetime was much higher than today. But now, the problem is more urgent.

- With the growth of technology, workers' need for basic skills is greater.
- In our post-industrial society, productivity depends more on people than on raw resources or machines.
- Today only 3 workers support each Social Security recipient compared to 15 workers in the 1950s. By the year 2000, the number will be 2.

The work world needs more skilled people and people with higher level skills.

Unfortunately—

- Almost 3 out of every 10 fifth graders will leave school before graduating.
- At least 25 percent of the approximately 14 million students in high school will drop out. In some schools, the dropout rate is 40 percent or higher.
- About 13 percent of all 17-year-olds can't read or write at a level to get by. The rates for minority 17-year-olds are much higher: Hispanics, 56 percent; blacks, 47 percent.

The figures are staggering—800,000 to 1 million students drop out each year, many of whom lack the skills for employment.

The end of the baby boom compounds the problem. By 1995, the employment pool of young adults will go down 22 percent.

Who will become the laser technicians, nurses, computer operators, and plumbers of the future if today's students drop out? How will society survive these shortages? Truly, dropouts are an urgent concern to us all.

Who Drops Out?

What do you know about dropouts?

A lot, you say? More than any statistics can offer?

Before you're tempted to put this brochure down, know that statistics *can* help you understand dropouts better. The relationship between the dropout problem and basic skills, for example, is clarified by looking at who the dropouts are.

Patterns: Most dropouts lack basic skills. Students with limited basic skills, however, do not necessarily drop out. For example—

- In terms of their cognitive abilities and skills, typical nonvocational dropouts are much like typical vocational graduates.

Vocational education has holding power. It helps students learn basic skills and stay in school—especially the dropout-prone who find it difficult to learn in other school programs.

Why is that important? Because dropouts tend to learn differently than other students. In one study, a group of dropouts differed significantly in 17 ways from students in alternative and traditional school programs.

Some groups have higher dropout rates than others.

- White and Hispanic females are much less likely to drop out than white and Hispanic males.
- Black females are somewhat *more* likely to drop out than black males.
- In one state, 76 percent of 120 migrant students failed to finish high school.
- Disadvantaged students are more likely to drop out than those from affluent families.
- The dropout rate is higher for large urban and small rural schools than for others.
- In a study of one state's prisons, over 80 percent of the inmates had not completed high school.

Not everyone in groups with high dropout rates, drops out. But if persons in these groups lack basic skills, they're more likely to.

Perspective: One needs to look beyond the numbers to understand dropout rates. Lack of basic skills and the high dropout rate of migrant, minority, and disadvantaged students can both be tied to unmet educational needs and poverty, as can the high dropout rate in large urban and small rural schools. The tie between dropouts, basic skills, and sex difference is less certain. Perhaps a clue is that the reasons male dropouts most often give for leaving school are "poor grades" and "dislike for school." The varying dropout rates of females, on the other hand, may reflect ethnic influence on their "personal reasons" for leaving school.

Dropouts do not all go to prison. Only 12 percent of a state's inmates who are dropouts tied their dropping out to going to prison. But a connection is there, and it may be basic skills deficiency. Research has shown that—

- nationally, nearly half the people in prison are illiterate (lack basic skills in reading and writing);
- of these, 82 percent are learning disabled.

Challenge: So what difference does all this information make? It makes a *big* difference if you work with dropout-prone students. Or if you've ever had a student drop out.

The more one understands a problem, the more clues one finds to a solution. For example, the course of events might have been different if those inmates who are learning disabled had been diagnosed and treated when they were students.

If you are haunted by that possibility, look at the other two brochures on dropouts. One brochure deals with factors that contribute to dropping out; the other, with consequences and antidotes. From these brochures you can learn more about how basic skills relate to—

- why students drop out,
- what happens to them,
- how it affects others, and
- what you can do about dropouts.

By understanding how basic skills relate to the dropout problem, you will be better equipped to help potential dropouts "stay in the race"—and win!

(Answers to statements on the cover: fact, fact.)

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Basics
Bridging Vocational and Academic Skills

THE NATIONAL CENTER FOR RESEARCH IN VOCATIONAL EDUCATION
THE OHIO STATE UNIVERSITY

Roadsigns From Research: Dropouts

Whys and Wherefores

Myth or Fact?

____ Drug use has a negative impact on basic skills achievement.

____ Of the major factors contributing to the dropout problem, school factors are the least controllable.

Why Do Students Drop Out?

Trends: Dropouts leave school primarily because of bad grades. What causes the bad grades?

Some researchers believe that dropouts are unable to learn. Others see dropouts as "defeated learners." How are they defeated? By educational and/or economic conditions that are too hard on them or don't meet their needs.

Researchers agree, however, that several factors, combined in a complex way, contribute to the dropout problem. These factors create a vicious cycle that is often triggered by basic skill deficiencies or perpetuated by them.

The *lack of basic skills* makes students feel frustrated and hopeless about school. Those feelings lead directly or indirectly to the decision to drop out. Research sheds light on the relationship of various other factors to basic skill deficiencies.

What's The Impact Of Personal Factors?

Patterns: Traditionally, boys and girls have tended to drop out for different reasons. Drug abuse, however, is a factor increasingly affecting dropouts of both sexes. This factor and two others significantly affect dropping out.

Pregnancy

- Nearly 1/4 of female dropouts give pregnancy as their reason.
- Each year, over 1 million teenagers become pregnant; 4/5 are unmarried and more than 1/2 give birth.

Employment

- About 27 percent of male dropouts give job offers as their reason.
- Working more than half-time while in school causes higher dropout rates for some groups.

Drug abuse

- In one urban study, only 26 percent of the non-drug users dropped out of school; 30 percent of those who used drugs casually; and 51 percent of those who used drugs at least once a week.
- From 1971 to 1983, the largest increase in drug use shifted from between 9th and 11th grade to between 6th and 9th grade.

Perspective: Often students who drop out because of pregnancy or employment are unhappy with school. Why? Poverty and bad grades may destroy their feelings of self-worth. So they seek satisfaction elsewhere. What they *get* is too much outside responsibility, which keeps them from doing schoolwork. That further prevents them from learning basic skills.

Students use drugs for various reasons. Unhappiness with school is only one factor. Basic skills deficiency may not often be the cause of drug use, but it certainly can be the result.

The side effects of drugs may block learning. Marijuana users lose their drive and become angry and hostile. Their short-term memory is damaged as are such mental processes as reading and using verbal and math skills.

Cocaine users have difficulty sleeping and concentrating. They may lose interest in everything except drugs. Cocaine also destroys chemicals needed for mental function. Basic skills development is next to impossible under these conditions.

What's The Impact Of Family Factors?

Patterns: Family factors are primarily beyond the dropout's control. Economic problems are an underlying feature.

The Home

- Violence or death in the family seems to contribute to the dropout rate.
- Dropouts are likely to come from large families.

Parents

- Parents of dropouts often are unemployed, lack education, or speak little or no English.
- Dropouts are twice as likely to come from single-parent homes as from two-parent homes.

Living Conditions

- Dropouts are likely to come from homes lacking reading material.
- Students who must contribute to the family's support or care are more likely to drop out.

Perspective: Home problems often create stress. Troubled students have difficulty concentrating on schoolwork. Students from large families or single-parent homes are less likely to get the help they need with schoolwork. Their parents may want to help, but may be exhausted by the struggle to provide financially.

Parents with little education are less likely to encourage children to study. They may be more concerned with present needs or don't see the importance of basic skills. It is hard to gain reading or English skills without practice at home. Youth who must help parents support or care for family members often lack the energy or time to study. Family factors can impede students' gaining basic skills.

What's The Impact Of School Factors?

Patterns: Schools and teachers, although not necessarily responsible for students' dropping out, may play a role in the process. Unlike family factors, school factors can be controlled to some extent by teachers and administrators.

Attitudes

- Dropouts often say that they felt alone, bored, and at odds with the school, whose program meant nothing to them.
- A school system often has a higher dropout rate because the system fails to see each student as unique.
- Teachers sometimes don't expect as much from students whose families are poor as from students whose families are affluent. Truancy or incomplete schoolwork may be excused.

Program and Instruction

- Schools may have dropout problems if they don't gear courses to individual interests and needs.
- Teachers may give more attention to keeping control than to teaching.
- Teachers may expect all students to learn in the same way.

Unmet Needs

- Students drop out when teachers, principals, students, and families don't work together to solve learning problems.
- Students drop out when schools don't provide good role models.
- Students drop out when a school's rules are not clear and fair, and forms of recognition are not available to all students.
- Students may drop out if the pressure to learn is not balanced by support, such as peer tutoring, academic development plans, smaller classes, and flexible scheduling.

Perspective: Negative attitudes toward the school and its teachers can lead students to undesirable behavior, such as truancy, fighting, and drug abuse. All these actions make it difficult to learn basic skills—or to teach them.

Schools and teachers can also have negative attitudes. Sometimes it seems easier to ignore problems rather than deal with them. Pressure makes some schools and teachers "drop out"too.

Schools "drop out" when they hold high standards, but don't give enough attention and support to students. Teachers "drop out" by letting students fail to learn.

Challenge: Some things can't be changed—like students' family circumstances or the size of a school. But most school problems can be remedied with attention to school rules and rewards, courses, and teaching practices. Solving school problems can in turn reduce the influence of personal factors on dropout-prone students and strengthen basic skills.

Are you helping to create a climate conducive to *everyone's* learning basic skills? You can do a lot to encourage dropout-prone students to "stay in the race." For ideas, read the third dropout brochure.

(Answer to statements on the cover: fact, myth.)

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Basics
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Roadsigns From Research: Dropouts

Hard Times and Handiwork

Myth or Fact?

____ Dropouts do better away from the problems they had in school.

____ Dropouts cost the nation more than keeping students in school.

____ Vocational education prevents dropouts.

What Happens to Dropouts?

Perhaps at first dropouts feel relieved to be out of school. Those who have jobs are free to work more hours. Others can focus on caring for family members. Low achievers may feel spared from daily reminders of failure.

Returning to School

Soon after dropping out, however, the majority of these youth say that leaving school was a bad decision. Some go back to school or enroll in community programs. Approximately 10 percent of the sophomore dropouts between 1980 and 1982 returned to school by fall 1982. However, the evidence is that it's easier in the long run to stay in school than go back to finish.

- Those dropouts who return to school were less likely to drop out in the first place.
  - — Reentry rates are higher for dropouts from suburban and rural schools than for those from urban schools.
  - — White dropouts with advantages are more likely to return to school than those who are disadvantaged.
  - — Dropouts with higher test scores are more likely to return to school than those with lower scores.
- The gap in thinking ability between dropouts and graduates widens after students drop out.

Hard Times

What happens to dropouts who don't return to school? Here's what we know about the effects of dropping out.

- Pregnancy
  - — With the responsibility of child care and support, it often is impossible to return to school.
  - — Almost 15 percent of pregnant teens are pregnant again within a year; 30 percent, in two years.
- Unemployment
  - — Female dropouts have a higher unemployment rate than male dropouts; minority dropouts have a higher rate than white dropouts.
  - — Over their lifetime, male dropouts earn 30 percent less than male high school graduates; female dropouts earn 45 percent less than female high school graduates.
- Crime
  - — Dropouts are 6 to 10 times more likely to be involved in criminal acts than are in-school students.
  - — Drug abuse contributes to the crime rate of youth—hence, especially of dropouts, who abuse drugs more than in-school students.

- Poor Health

  — Dropouts are much more likely to develop high blood pressure and heart attacks.
  — A 1980 study found that half the dropouts and dropout prone in a middle class suburb seriously considered suicide; nearly one-third attempted it.

Perspective: Teens who get pregnant again have lost hope of returning to school. Learning basic skills could have helped these dropouts find career direction and purpose through increased options and greater self-confidence. Increasingly, employers require new employees to have a high school diploma. Without basic skills, it is very hard to earn one's way out of poverty. Perhaps that is why so many dropouts turn to crime. The hardships from dropping out, worsened by the lack of basic skills, cause stress-related illness.

How Do Dropouts Affect Others?

Repercussions

The effects of dropping out are not confined to the dropout. Many others also know hardship and loss as a result. Count the toll on others—in lost fulfillment as well as money. Then it's even clearer how important basic skills are.

- Economic Tolls

  — The 1969 cost in lost tax revenues tied to dropouts ages 25 to 34 was estimated at $71 billion.
  — Welfare and unemployment costs for this group were estimated at $3 billion; crime and crime prevention, another $3 billion. That's more than the cost of keeping students in school.
  — A male dropout is likely to earn $260,000 less in his lifetime than a graduate; a female dropout, $170,000 less.

- Educational Tolls

  — Children born to youth often drop out and become teenage parents themselves.
  — Of today's dropouts, 75 to 80 percent have parents who also dropped out—disregarding the factor of teenage pregnancy.
  — A dropout influences friends, as well as brothers and sisters (especially younger ones), to drop out too.
  — High dropout rates lower school standards, achievement, and individual growth of students.

Perspective: These data reveal how large and powerful the dropout problem is. What happens when a student drops out?

- The *nation*, not just the dropout, has fewer resources to secure the future.

- Fewer national and personal options mean less freedom for the advantaged and the disadvantaged alike.

- Dropping out destroys freedom of choice—not only for the dropout but also for the friends, siblings, and progeny who follow suit. The lack of basic skills makes victims of us all.

What Can You Do About Dropouts?

Prognosis

The dropout problem threatens everyone. Schools, families, and employers have fortunately become very concerned about this crisis.

Vocational teachers, for example, play a vital role in helping students "stay in the race." These teachers provide students the opportunity to learn basic skills through experience.

Why is that important? Because *this is the way dropout-prone students prefer to learn.*

What's vocational education's track record?

- Potential dropouts are more likely to finish 10th grade if they're in vocational classes.
- The dropout rate declines in 11th and 12th grade if students have more than three vocational credits.
- Vocational graduates get better jobs, earn higher wages, and suffer much less unemployment than dropouts.
- Even vocational students who drop out hold more complex jobs and earn more money than dropouts without vocational training.

Trends: Currently, vocational teachers in many schools are trying even harder to encourage dropout-prone students to stay in school. They are working together with academic teachers to find even better ways to teach basic skills.

This joint effort benefits teachers through shared insights. More important, students find it easier to learn and remember basic skills. This approach lets students apply basic skills in real ways. As a result, students' problem-solving ability makes them more valuable to an employer.

Perhaps this thrust on basic skills is not the total answer. But, given what we know about dropouts, the joint effort to strengthen basic skills seems crucial to bettering the odds of students' completing school.

Challenge: As a teacher, how successful are you in influencing dropout-prone students to "stay in the race?" Would you like to better the odds? Here are several suggestions that can make a difference:

- Provide application opportunities for students to practice basic skills in a relevant way.
- Discuss dropout concerns with students, families, teachers and/or counselors.
- Have members of vocational student organizations talk to potential dropouts about how their activities help them.
- Encourage your school to institute peer tutoring, academic development plans, and flexible scheduling.

- Provide opportunities for students to discuss with employers why they prefer to hire vocational students over dropouts, and
- Read and listen to accounts of dropout prevention programs in the media.

(Answers to statements on the cover: myth, fact, fact.)

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Why not get involved? For further information about your school's joint effort plans, contact—

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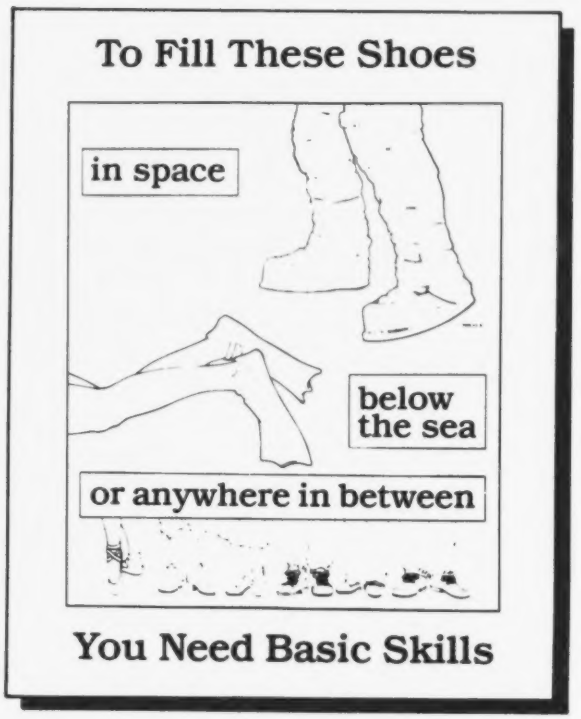
Roadsigns From Research

Business & Industry Perspective



Myth or Fact?

____ Academic achievement determines success in the workplace.

____ Schools and employers differ on the adequacy of high school graduates' basic skills.

____ Companies cannot afford to take time to teach basic skills.

____ Practice in applying knowledge motivates students to study basic skills.

D–1

When business does remedial teaching, we're doing the schools' product recall work for them.

David T. Kearns
President and CEO
Xerox Corporation

How Do Companies View Basic Skills?

Perspective: Listening to employers reveals the far-reaching importance of basic skills. It reminds teachers, for example, that the classroom is not where students will spend four-fifths of their lives.

Employers are concerned with *productivity*. Teachers, however, focus on *achievement*. The two accomplishments are not necessarily synonymous. Students may have good grades yet be unable to apply knowledge. The ability to apply knowledge through problem solving increasingly determines anyone's success in the workplace. In the workplace, solving problems is integral to using basic skills effectively.

Employers, like teachers, encounter two types of basic skill problems. One type is a limitation, or *deficiency*, which is easily remedied. The other type, functional illiteracy, is the *inability* to meet the skill demands of ordinary life and is more serious. Employers have to weigh basic skill problems against productivity. Basic skills give employees the ability to acquire job-specific skills quickly.

Patterns: Several studies note companies' problems with young people who have diplomas but lack basic skills. Some of the findings suggest a basic skills crisis:

- Technology is both eliminating unskilled jobs and creating a need for highly knowledgeable and flexible workers who can apply their skills in different job situations.
- The costs of functional illiteracy are high—one company, according to the *Wall Street Journal*, had to pay $1 million because a worker couldn't copy numbers correctly.
- Industry's entry-level employment pool is shrinking in quality and quantity. A higher proportion of youth go to college and more women opt for professional or nontraditional occupations.
- Work in factories is changing from highly segmented, routinized duties to coordinated production processes that give individual workers greater authority.

A paradox exists between the way that employers value and reward basic skills. Companies do not initially reward with higher wages or more work hours the basic skills they want in new workers. It takes 5 years after graduation for vocational students to realize such rewards for basic skills.

Yet industrial psychologists have found that tests measuring basic skills are the best predictors of job performance and productivity. Some findings are—

- The major contribution of cognitive skills to productivity is that they help workers learn new tasks more quickly.
- Basic skills foster easier entry into higher wage occupations in which cognitive ability is crucial to performance.
- A clerical worker with a 100-point improvement in math and verbal SAT scores can be 15 percent more productive.

What Entry-Level Skills Do Companies Want In Workers?

Patterns: A recent survey gathered differing impressions from the workplace and schools about basic skills. Employers reported deficiencies in all basic skill areas. School administrators tended to

view as adequate youths' skills for employment that employers viewed as low. Areas of greatest disagreement were in mathematics, science, and speaking and listening skills.

Trends: Several studies discuss the entry-level skills wanted by companies. Two such studies show slightly different priorities for employers and personnel managers. In all the studies, however, companies place more emphasis on speaking and listening skills than school curriculum typically does. In more than one study, employers viewed science as a basic skill.

One study has identified these 11 entry-level basic skills as necessary:

- Reading, writing, and counting (math-related)
- Adding, subtracting, multiplying, and dividing
- Following written instructions
- Writing legibly
- Completing forms and applications adequately
- Signing forms appropriately
- Writing dates and times correctly
- Using listening skills to identify procedures to follow
- Using listening skills attentively
- Applying information learned through listening
- Speaking face-to-face coherently

What Are Business and Industry Doing About Basic Skills?

Perspective: Because the rewards are long-term, employers have too often neglected human resource development. Often companies are reluctant to admit that their employees have basic skills deficiencies. It is estimated that less than 1 percent of American company training funds is spent on remedial education.

Some companies that modernize choose simply to lay off workers with inadequate skills. However, a growing number of companies (especially large ones) have found it more cost-effective to retrain workers than to lay them off and hire new ones. But retraining efforts pose problems for companies. It is hard to turn general perceptions of basic skills into specific comparisons of workers' deficiencies to job requirements.

Company basic skills programs tend to be remedial. Remedial programs frequently involve collaboration between schools and companies. Company cooperation to help schools deal directly with preventing basic skills problems, however, occurs rarely.

An employment manager at a major Chicago bank has admitted that her employer offers remedial English courses to promising job applicants. Why? Because it's the only way they can fill openings.

Trends: A study of eight companies and a union found the following trends:

- Reading and math are the two skill areas taught most often in company literacy programs.
- In nearly all literacy programs, enrollment increases as employees see the benefits from the initial course.
- Employee enrollment in company literacy programs is usually voluntary.
- Cooperation in literacy training between union and company management and schools is evident and growing.
- Companies' literacy training usually occurs at company sites.
- Typically, very little formal evaluation of literacy programs or follow-up of attendees' subsequent work performance takes place.

What Can Teachers Do To Help Meet Companies' Basic Skill Needs?

Suggestions:

1. *Motivate students to study basic skills by providing application opportunities.* Remind students of long-range benefits. Use simulations and small group activities to help students learn to solve problems and communicate effectively.

2. *Encourage good study habits.* Research on time on task shows that high school students are actively engaged in learning only one-half of the school day. Be a role model for your students by using study time efficiently.

3. *Recognize skills achievement.* Notice and praise success. Be concrete and positive when you point out problems by illustrating suggestions for improvement.

4. *Develop long-term, informal relationships with employers.* All teachers can address this long-term task. Teachers' job referrals help students obtain good jobs. Invite employers to your classroom to talk to students.

5. *Improve student records.* Use letter grades rather than pass/fail on assignments to encourage students to do more than the minimum. Grade aspects of performance separately so that all students can excel at something. Develop an academic development plan for each student that builds understanding between students, families, and employers.

6. *Collaborate with other teachers, counselors, and school specialists.* Adequate diagnostic information, instructional advice, and counselor linkage with employers, are essential to strengthen basic skills. Joint efforts can help explain basic skill deficiencies and how to deal with them.

Challenge: Teachers can do much to prepare students for the workplace. Are you in touch with the work world outside of school to know what employers need? How do you deal with students' development of basic skills? Why not get involved in the joint efforts of others in your school!

(Answers to statements on the cover: myth, fact, myth, fact.)

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Roadsigns From Research

Special Populations

Myth or Fact?

_____ Special population students often lack the ability to learn basic skills.

_____ Mainstreaming has eliminated the barriers that special population students have had in learning effectively.

_____ The learning difficulties of special population students should be addressed from a comprehensive perspective that looks beyond obvious causes.

_____ Immigrant and minority youth especially require alternative instructional methods to meet their unique learning style needs.

Freedom's just another word for nothin' left to lose . . .
"Me and Bobbie McGee"

What Do Special Population Students Have In Common?

How free are special population students? Do our migrants, minorities, immigrants, and handicapped leave school with options? How freed of barriers are they to seek the American dream? Or is what makes them *special* that they typically end up feeling like the Appalachian coal miners in the song who have "nothin' left to lose"?

Special populations are a current focus of attention in vocational education research. The 1984 Carl D. Perkins Vocational Education Act mandates that "effective methods for providing quality vocational education" be researched to benefit the handicapped, the disadvantaged, and those with limited English proficiency (LEP), among others.

These students may stand out in classrooms because of special learning difficulties. Frequently, standard teaching procedures are insufficient for these students. Teachers may need to use *special* methods to help these students learn basic skills.

These students are *special* in another way that may have contributed to the current Federal priority. It has to do with what happens to many special population students when they leave school.

Patterns: What happens to different types of special population students suggests why schools need better ways of providing them with quality vocational education—so they have options, or a freedom worth *saving*.

- A Vermont study found that only 38 percent of mildly mentally retarded graduates found postschool employment, compared to 64 percent of learning disabled or behavior disordered graduates.
- The Bureau of the Census reported in 1980 that during the previous year 33.6% of minority youths were unemployed, compared to 13.9% of white youths.
- Approximately 80 to 90 percent of all migrant youth leave school before graduating, with 60 percent leaving before the ninth grade.
- Only 60 percent of special education students graduate.
- Approximately 60 percent of special education students find employment after leaving public school.
- Immigrant and minority youth are sentenced to prison terms in disproportionately high numbers relative to their representation in the population.

Many complex reasons such as racial discrimination and cultural differences probably contribute to the chronic unemployment rate among minority teenagers. Schools' failure to help them learn basic skills, however, may be an underlying factor behind their problems in seeking and maintaining a job. Immigrant and minority students who successfully enter the work force may demonstrate—

- decreased productivity;
- increased absenteeism;
- increased rates of industrial accidents;

- coping problems related to alcohol, drugs, or absentmindedness; and
- workplace disputes or seemingly unprovoked outbursts.

For special population students—as for all youth—mastery of basic skills (for example, reading, math, and science)and the ability to communicate with others are very important to successful entry and progression in the work force. Employers view basic skills as more important than specific occupational skills for high school graduates seeking entry-level jobs. Employers also see basic skills as more important than a student's academic record, examinations passed, or diploma received.

Of all the basic skills, language ability is perhaps most important. It is the key to other skills. It even unlocks the door to understanding math through math's own language. Language difficulties among LEPs, minorities, and the learning disabled help to explain their problems with other basic skills. Often these barriers, rather than the lack of ability per se, hold special population students back. To understand the *special* learning difficulties of special populations, one must consider other factors as well.

What Makes The Basic Skill Problems Of Special Population Students Difficult To Solve?

Perspective: Several factors contribute to the basic skill problems that limit the freedom of options for special population students. Frequent among these are poverty, negative self-concept, health/nutrition problems, and inadequate socialization. One or more of these problems are almost stereotypical for these groups. Three illustrations provide a closer look at how these and other specific problems impinge on basic skill achievement.

Migrants. General malnourishment and the effects of poor living and work environments may explain, in part, the high rate of mental retardation among migrant youth. These youth are severely disadvantaged. Concern for day-to-day survival takes precedence over setting and striving for long-term career goals. Consequently, to migrant youth the need to learn basic skills often seems irrelevant. Migrant youth may also have unique communication problems caused by—

- restricted experiences,
- limited conversational opportunities for language development,
- difficulty comprehending what's seen or heard,
- unavailability of models of good sentence structure and vocabulary, and
- speech and listening patterns based on migrants' dialect or different language.

Immigrant and Minority Youth. Parental backgrounds and educational levels are often cited in explanation of the educational handicap of immigrant and minority youth. These youth are often victims of unintentional racism—low teacher expectations may influence them to perform poorly. Recently, researchers have discovered that immigrant and minority groups have distinctive learning style patterns that prevailing instructional methods and school demands do not adequately address. Economically disadvantaged blacks, for example, may tend to favor visual and hands-on learning since they often are not verbally inclined. The cultural shock encountered by immigrants

especially affects females for whom the independence and initiative fostered by the American educational system are unfamiliar. Immigrant males may have difficulty dealing with classroom confrontation and criticism.

Handicapped Youth. Many handicapped students have difficulty developing positive self-concepts, in part because of isolation that disability often causes. These students need special support from activities such as role playing, group guidance, and extracurricular activities. Such experiences give handicapped students an opportunity to develop a sense of their identity as contributing members of the class. Experiencing success in areas of personal interest helps to reduce feelings of "differentness" and inferiority that limit one's sense of options more than physical handicaps do. These students are very sensitive to criticism; successes should be praised and failures, minimized.

Until recently, psychological evaluations of handicapped students were conducted and decisions made about their educational placement without family involvement. A lack of parental insights on the part of school staff may have often shortchanged these students. Now, however, the participation of parents with teachers in making personal development plans is more likely to give handicapped students access to the basic skill achievement essential to future independence and employability.

What Is Needed To Overcome These Learning Difficulties?

Trends: The learning difficulties of many special population students challenge our schools' ability to respond to unique needs. Factors in these students' backgrounds and life situations create formidable barriers to effective learning.

For this reason, schools need to deal comprehensively with these difficulties. Emphasis upon teaching basic skills is not enough. Nor is mainstreaming, which may make certain barriers more pronounced if not addressed properly. A student's cultural influences, low self-esteem, and hungry stomach must also be sensitively considered.

At the same time, schools need a plan that puts the challenge in perspective so that the approach seems reasonable. Teachers need to know where to start in their efforts to provide special population students with appropriate learning opportunities. While basic skills are not the total answer, their mastery can initiate an important chain reaction. Competence in basic skills makes students feel more confident in tackling other school requirements. Several psychologists view the mastery of basic learning skills as a prerequisite for emotionally disturbed (ED) students to overcome emotional problems.

What's Needed: Certain changes, however, are needed to enable special population students to succeed scholastically. These changes relate to both vocational programs and teacher perspectives.

Much of the solution to the problem of special population students lies in their achieving freedom of options. How? Through adequate preparation for meaningful work and full participation in the mainstream of American life.

These students seek equality. Unfortunately, not many of these students see vocational education as having the potential to meet this need. Disadvantaged students, for example, equate vocational education with low-status work. Minority group parents think vocational education is for

students of low ability. The limited number of bilingual vocational education programs discourages LEPs from enrolling.

The following innovations can make vocational education programs more responsive to special population students:

- Bilingual instruction can enable students to learn technical skills in their native language and basic employment vocabulary in English. This approach, which is more efficient than using only English, also enhances LEPs' self-esteem and preserves their cultural heritage.

- Multicultural approaches to curriculum need to be initiated to combat negative stereotyping, promote pluralism, and encourage cooperation rather than competition. Problem solving in culturally diverse groups and exposure to examples of different cultural strengths benefit both minority- and majority-group students.

- Ability testing and classroom placement should be culture-fair to enable accurate assessment of abilities and to combat the negative effects of teachers' low expectations on student performance.

Teachers need to change their perspectives in two ways to help overcome the learning difficulties of special population students. Teachers need to—

- Reject the idea that minority youths have cultural deficits, which contributes to low self-esteem and resentment of school. Instead, become more aware of minority cultures' strengths and use teaching techniques consistent with students' culturally influenced learning style. This change requires flexibility in teachers whose teaching style, also culturally influenced, may be inconsistent with a minority student's learning style.

- View all handicapped students as potential workers and adjust academic development plans and classroom instruction to meet the specific basic skill job requirements for these students. Help handicapped students find jobs, because having real jobs while still enrolled in school is a predictor of these students' having jobs after leaving school.

What Can Teachers Do To Strengthen Basic Skills Of Special Population Students?

Challenge: Weak language skills are a major barrier to the freedom of options for special population students. Many strategies for vocational instruction of LEPs are also useful with disadvantaged and handicapped students, such as—

- Demonstrate new terms; use diagrams, slides, or outlines; support oral explanations with written explanations (and vice versa).

- Allow sufficient learning time for all students.

- Break down information into small, manageable units.

- Use short sentences, repeating key terms and ideas.

- Individualize instruction as much as possible.

Additional recommendations for teaching basic skills to special population students are—

- Employ alternative instructional methods to meet the varying learning style needs of students, especially those immigrant and minority youth whose learning style may be inconsistent with prevailing instructional styles.
- Involve community organizations for immigrants, minorities, and the handicapped in efforts to motivate and support special population students.
- Confer and collaborate with special education teachers to better understand how to meet the needs of particular students.
- Provide one-on-one tutorial assistance from peers, student teachers, or other volunteers.
- Involve parents/guardians in preparing students' academic development plans so that family members support teaching efforts and share an understanding of students' potential.
- Before introducing new material, review pertinent information and use advanced organizers and summaries to activate students' prior knowledge.
- Allow students to practice new skills successfully, first in structured situations, then independently.
- Cooperate with employers to provide special population students with work experience to learn basic skills through concrete application.
- Monitor frequently the progress of students placed on the job.

(Answers to statements on the cover: myth, myth, fact, fact.)

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Want to help free your special population students through basic skills to seek the American dream? Why not get involved! For further information about your school's joint effort plans, contact—

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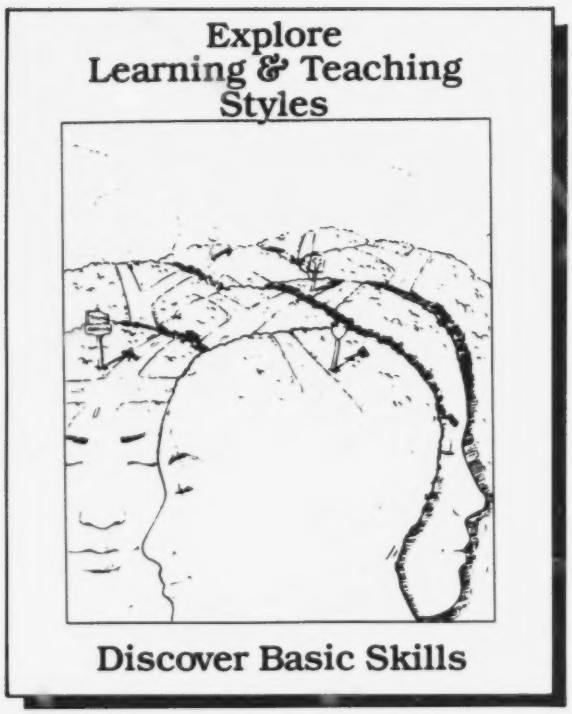
(800) 848-4815

Basics
Bridging Vocational and Academic Skills

THE NATIONAL CENTER FOR RESEARCH IN VOCATIONAL EDUCATION
THE OHIO STATE UNIVERSITY

Roadsigns From Research

Learning & Teaching Styles



Myth or Fact?

____ Learning conditions create individual differences more than student capability does.

____ People who can't tell the forest from the trees are less intelligent than people who can.

____ The ultimate goal of assessing learning and teaching styles is to match them.

____ A teacher's learning style limits how he or she can teach.

. . . the same fire that melts the butter hardens the egg.
In Search of Human Effectiveness

Are All Students Capable Of Learning Basic Skills?

For any teacher who has ever failed a student for course work, it is probably tempting to answer this question "No." The issue of accountability can be troublesome for even the most professionally dedicated. Before answering, however, consider these findings about students, secondary teachers, schools, and the brain:

- *Students* of all ages learn in different ways and with varying degrees of flexibility.
- *Secondary* teachers appear to accept and implement far fewer instructional practices than do elementary teachers.
- *School settings* tend to favor students who are analytical, task-oriented, comfortable with abstractions, verbal, and reflective and who organize sequentially and have a long attention span.
- *The human brain* constantly grows and changes. Environmental stimulation and a wide range of experiences are necessary for optimum brain functioning.

A small percentage of students may be too impaired to master basic skills—but much smaller than success rates typically suggest. If learning, teaching and school constraints are addressed, students' potential to learn and improve basic skills may become even greater. And as knowledge unfolds about the brain, greater learning potential for nearly everyone will surely be realized.

Unlike a computer, the human brain doesn't fill up. Recent research now suggests that the more people learn, the more they're capable of learning. Yet our use of the brain's potential has been estimated to be as low as 10 percent.

Who can learn basic skills is very important to vocational teachers, especially in light of mainstreaming. But the final answer remains a mystery posed repeatedly by each new vocational student. What *is* each student capable of learning. . . and how?

Some researchers have tried to solve this mystery by exploring teaching strategies to find one that works with all students. Others have searched for clues by exploring the teaching/learning process through individual maps, or profiles, of their characteristics.

The results? Research has discovered why the teaching/learning mystery is so complex. Teachers can control the teaching, but students control the learning—and the success of each depends on the other. Furthermore, the same method that teaches one student may fail to reach another.

Patterns: At least two concepts appear to have had a major influence in education during this century. The first concept is *individual differences*. Initially, this term meant that students reflect different aptitudes by achieving at different levels.

Years ago, the high dropout rate was accepted, thereby minimizing the issue of differences. More recently, the desire to have schools prevent dropouts has resulted in alternative content and experiments with different methods and materials. Also, students have been grouped by perceived ability level for class enrollment.

Ability grouping may unfortunately have impeded learning basic skills by limiting the extent to which lower groups are stimulated by peers in higher groups. Ability grouping may also have inadvertently misled teachers into using a smaller repertoire of teaching methods. Goodlad's recent national study of schools found an alarmingly narrow range of teaching methods in use nationwide at *all* school levels.

Where it is used, the second influential concept of *mastery learning* appears to reverse this trend. Research by Bloom and others concludes that students differ in their *rate* of learning rather than in their basic capacity to learn or achieve. A teacher's initial reaction to this claim may be disbelief, but Bloom's studies are based on actual classroom events.

Bloom's studies reveal that—

- under favorable conditions, up to 90 percent of the students can learn school subjects, presumably including basic skills, up to the same standard that the top 10 percent of the students accomplish under usual conditions;
- perception of how well one is doing compared to peers influences self-esteem more than standardized achievement tests do;
- under favorable conditions, most students become similar in learning ability, rate of learning, and motivation for further learning.

In other words, *learning conditions* create individual differences more than student capability. Additional time on task and teacher feedback are examples of favorable learning conditions. Another key example is that teachers provide a different method for students who do not achieve mastery through the initial approach.

But how does a teacher determine the most effective and efficient alternative method? A model is needed to guide decisions about favorable learning conditions.

Trends: In recent years several *learning style* models, reflecting the work of psychologists and educators, have appeared to help explain how students learn and what learning conditions they need in order to thrive. "Style" refers to the gradual development and dynamic nature of an individual's learning behavior. Learning styles are overall patterns of individual learning procedures and preferences, influenced by both heredity and environment. These patterns are fairly stable, but capable of adjustment, depending on the learning task and teaching method used. Also, as people mature, their learning styles tend to deal with abstractions better.

Existing learning style theories focus on one or more of three aspects:

1. Cognitive—how the brain receives, processes, stores, retrieves, and applies information
2. Affective—how emotional and personality characteristics such as motivation, interests, and sociability influence the learning situation
3. Physiological—how the senses, environment, food, and time of day enhance or impede the learning process

Frequently, learning style characteristics are depicted in polar opposites. For example, a cognitive pair is sequential vs. random. An affective pair is realistic vs. imaginative. A physiological

may be a preference for quiet vs. noise. Some of these polar opposites may appear to suggest the complementary relationship between the left and right hemispheres of the brain.

Several notions and myths about the brain have circulated among educators in recent years. Many of them focus on the two sides of the brain. Emerging brain research helps to clarify this issue. It also supports the need to recognize and address different learning styles.

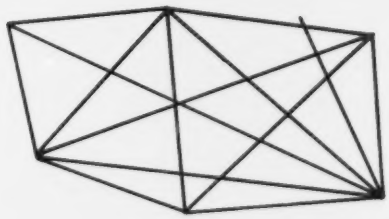
The two hemispheres of the brain are specialized to a degree in their functions. The left brain has been linked to sequential, analytical, and objective thinking; the right brain to random, global, and subjective thinking. These alternative thinking roles are equally valid and contribute significantly to one's comprehension and learning style. The final output of understanding cannot, however, be attributed to one hemisphere or the other, according to Jerre Levy, a noted brain researcher.

From her study of brain-damaged patients, Levy has determined that thinking in normal people derives from the specialized processes of both sides of the brain. Creativity derives from fully integrated whole brain activity. Simple tasks require relatively little bilateral brain activity, whereas increasing task complexity activates and integrates both sides.

There is evidence that individuals differ in the degree that one hemisphere is aroused over the other. Therefore, whole brain learning may require different teaching methods and learning conditions for some people than for others. If the hemisphere favored by one's learning style is insufficiently addressed, or if the faculties of both hemispheres are insufficiently integrated, learning may apparently be impeded. In other words, teaching only by lecturing does not guarantee that *all* students can learn to add fractions; nor will *all* students necessarily be able to learn to spell proficiently if they have to study alone and silently all the time.

What Implications Do Learning Styles Have For Achieving Basic Skills?

Look at this geometric figure.



How quickly can you find the parallelogram?

Now see if you can find the five-pointed star.

Was this task easy or did all the lines make it hard or impossible to find simple shapes in a more complex figure?

Your answer provides a clue to part of your learning style.

Patterns: A truth recognized long ago in the adage about trees and the forest is that people perceive things differently. Some can tell the trees from the forest. But others who focus on the forest may take longer to discern particular trees—if they do at all.

People who are influenced a lot by factors around them (background) may find it hard to pick out specific information within that frame of reference. The view perceived is like a landscape snapshot that tries to take in everything on the horizon. These learners are *field-dependent*.

People who can ignore background interference and focus on specific information within the frame of reference are *field-independent*. Their "landscape snapshots" do not attempt to take in everything but impose a logical order on just what is objectively meaningful—such as a rainbow or waterfall.

How students perceive information is one aspect of learning style. Sensory preferences, environmental needs, and emotional factors such as risk-taking and motivation are other aspects. Field-dependence vs. field independence, first described by cognitive psychologist Herman A. Witkin, may hold one of the most important keys to improving learning. Trace the influence of these two perception characteristics, and the implications of learning styles for achieving basic skills become clearer.

Information: Field-independent students perceive analytically. They are good at learning tasks that involve breaking a whole into its parts. Their orientation is impersonal; concepts are interesting for their own sake. It is easy for them to structure information.

Field-dependent students perceive globally. They are good at drawing relationships that connect parts into a single context. Their orientation is social; concepts of greatest interest relate to their own experience. If organization is not provided, they adhere to whatever structure that information happens to have.

- Who are likely to feel more comfortable trying to identify the parts of speech in a sentence? (Field-independent students, who are at ease with structure tasks.)
- Who are likely to need a worksheet of study questions or an outline to guide them in a reading assignment? (Field-dependent students, who benefit from organization aids.)
- Which learning style requires more praise and extrinsic reinforcement? (Field-dependent students, whose orientation is social.)
- Which learning style does a test of true/false questions favor? (Field-independent students, who are skillful at analysis.)

Few students function at either of these extremes. But most display *tendencies* in one direction or the other. One type is as intelligent as the other. Their comparative learning achievement, however, may differ depending on the kind and complexity of learning task they're given. Why? Because—if degree of complexity is equal—a learning task incompatible with one's learning style tends to take longer to do.

With their analytical and organizational skills, field-independent students may find it easy to apply basic math skills in solving word problems. Field-dependent students, however, may not master subtraction until they experience personal relevancy through the social context, for example, of simulating a cashier making change.

Research shows that secondary school teachers favor learning tasks based on lectures. This tendency unfortunately favors the learning style of field-independent auditory students only. The limited number of teaching techniques used by school teachers generally may help to explain the problem many students have with basic skills.

Challenge: Research suggests that the difficulty of the following groups to learn basic skills (i.e., achieve academically) may be partially attributable to unmet learning style needs:

- Adolescent delinquents (many of whom seem to have learning disorders)
- Dropouts
- Poor readers
- Certain ethnic groups
- Many youth of the majority population

Although questioned by some, research by Dunn and Dunn also indicates that responding to learning styles can directly increase academic achievement. More certainly, addressing learning styles especially improves attitudes and reduces discipline problems—two important affective issues in dealing with students who struggle to learn basic skills. Attitude and discipline can in turn affect academic achievement.

If you found it frustrating to look for the parallelogram and star, perhaps you can better empathize with students whose learning styles are not addressed. If you found the shapes easily, are you smarter than those who can't? Not necessarily. Just understand why you shouldn't assume that everybody else learns the way you do.

Learning styles theory and research have three important implications for basic skills achievement:

- How you interpret students' failure to learn basic skills
- What you do about your students' difficulty learning basic skills
- How basic skills can likely be achieved

Aware of this, can your teaching behavior ever be quite the same again?

How Do Teaching Styles Affect The Process Of Learning Basic Skills?

Trends: Are you very task-oriented in your teaching? Do you give a lot of directions? What if a student who needs a lot of structure is placed in your class?

What if a student whose learning style preference is intuitive and spontaneous is placed in your class?

Which of the two students will do better learning how to punctuate sentences or divide fractions? The basic skills achievement of each student may be quite different. But do you know why?

The answer may lie partially in the task. But it may also lie in the relationship between learning styles and teaching styles. Teaching styles are the pervasive ways that teachers present subject matter and manage learning situations, sometimes cutting across given teaching techniques. One educator estimates the existence of 80 or more different teaching models.

The desirability of alternative teaching approaches to meet the needs of a heterogeneous classroom has been known for a long time but not necessarily put into practice. Special education teachers were perhaps the first to recognize that certain students have specific learning needs that *require* certain teaching styles for learning to take place. The factors that determine a teacher's teaching style and the effects of different teaching styles are recently becoming addressed and better understood.

Just as students have learning styles, teachers do too. Most learning style theorists say that teachers tend to teach in harmony with the way they prefer to learn. Other factors, such as how teachers were themselves taught and how they perceive students' needs may affect the flexibility of their teaching.

Many learning theorists advocate matching learning and teaching styles, at least initially.

Researchers, however, disagree about the effect of constantly matching teaching styles with learning styles. Certainly one needs to meet the student at his or her level, but growth in learning ability may not occur without some positive discomfort strategically employed. Also, a student's preference may not reflect the way that person learns best if that preference disrupts performance. Lying down to read, for example, can lead to falling asleep.

In fact, it is impossible to match all aspects of style because of the variety in teacher, student, and task characteristics. You have to decide carefully the most critical style aspects to address. The greatest merit perhaps in matching styles when teaching basic skills may be to improve students' attitude, decrease their anxiety, and to strengthen a particular cognitive skill such as abstract thinking.

Information: More than one theorist has sought to distinguish the relationships between different learning and teaching styles. Gregorc does so by focusing on how people perceive information (concrete vs. abstract) and order information (sequential vs. random). He has used the same descriptors for four learning styles and four teaching styles:

- Concrete random (CR)—intuitive
- Concrete sequential (CS)—experimental
- Abstract random (AR)—reflective
- Abstract sequential (AS)—logical

Gregorc believes that students and teachers have strengths in at least one of these styles. Strength in more than one style makes for more flexibility in teaching and learning.

The objective for teachers, believes Gregorc, is to develop skill in several styles to better teach students whose learning style does not match the teacher's preferred style. Students should also be challenged with unpreferred teaching styles when their confidence and achievement through preferred styles are achieved.

As the terms in his descriptors suggest, Gregorc's theory focuses on the cognitive aspects of perceiving and processing information. Which of the four teaching styles do you favor?

Check the list that best describes your teaching:

_____ A. Want to probe and examine
Desire students to think for themselves
Like the discovery approach
Offer unexpected resources

_____ B. Favor highly structured activities
Use practical lessons
Value physical first-hand experience
Work under strict time limitations

_____ C. Offer a personalized class
Foster spontaneity
Cover material by themes
Like self-expression
Use media and discussion as primary teaching tools

_____ D. Use logic and analytical approaches
Require testing of hypotheses, often through debate
Stress memory and comprehension of theory
Rely on lecture format and extensive reading assignments

Descriptors A (CR), B (CS), C (AR), and D (AS).

Merely identifying your learning and teaching styles is not enough. They need to be related to students' learning styles in order to have an impact on the process of learning basic skills. More than 30 learning style assessment instruments exist. But more needs to be known about how matching works. Meanwhile, understanding your favorite teaching style can help you guard against using it exclusively.

How Can You Use Learning/Teaching Styles To Strengthen Basic Skills?

Challenge: Because of the rapidly changing workplace, preparing vocational students for employment is more complex. Uncertain demands of this new era make students' ability to learn and adapt more important. A 1984 study by the National Academy of Sciences concluded that every high school graduate needs the same competencies as college-bound seniors—especially the ability to reason and solve problems.

Statistics on high school youth make this responsibility a challenge for teachers.

- Because vocational students tend to enter programs with low mean reading and math scores—despite significant growth—high school seniors in these programs score significantly lower than those of college-bound seniors.

- More than 400,000 vocational students have identifiable handicaps, including learning disabilities.

- Although the majority of 17-year-olds achieve minimum skills, only a minority achieve the higher level skills needed for future jobs.

- If this situation is not improved, as many as 2 million students may graduate in 1990 without the reasoning and problem solving skills necessary for employment.

Pledge for the Future: Like cognitive psychologists, learning/teaching style theorists are concerned with how people think. From their efforts, you can expand your understanding about—

- what goes on in students' heads while learning and performing tasks,

- how students solve problems and what the "higher mental processes" are,

- what students need to learn to perform and to solve problems intelligently, and

- how students learn and how they acquire knowledge and skills.

These understandings provide important insights to help students strengthen basic skills.

So there is good news as well as bad news! Perhaps it would be helpful, before reading any further, to ask yourself three important questions:

1. Do I want to do a better job of helping students develop traditional basic and higher level basic skills?

2. Do I recognize the importance of enabling students to learn how to learn and continue learning throughout their careers?

3. Do I agree that teachers need to adjust to students' learning styles rather than expect students to do all the adjusting to our teaching styles?

If you can freely answer "yes" to all three questions, then the following suggestions will be useful. And what if you're not convinced or are undecided? Why not read the list anyway, remembering that how you learn may influence but does not limit how you can teach. Only your reluctance to become all that you can be does that.

Ideas with Promise: It takes time to make changes; implementation of an abstract concept is not easy. Meanwhile, the growing number of teachers who are experiencing success with learning and teaching styles provide incentive to get involved.

Cornett, in a Phi Delta Kappa booklet on learning and teaching styles, offers several teaching strategies that recognize the existence of different learning styles. Using them fosters a more flexible teaching style. These strategies (see Cornett's booklet for more detail and examples) may be useful in teaching basic skills to students with learning difficulties:

1. Ask questions of all types and at all levels of the cognitive domain to address several levels of thinking.

2. Help students engage new ideas through past experiences by providing a general overview of material to be learned.

3. Involve the right and left hemispheres and allow sufficient time for the processing and integration of information.

4. Expect each student to learn at least one new thing each day.

5. Clarify the purpose before involving students in any learning experience.

6. Provide warm-up experiences before teaching a lesson.

7. Facilitate remembering and skill development through spaced practice that incorporates more than one sensory mode if possible.

8. Help students process and retrieve information through multisensory techniques (e.g., both write and say directions).

9. Bring closure to learning through a variety of review and reflection strategies.

10. Use descriptive feedback rather than only cliches expressing praise.

11. Make abstractions less difficult through the use of concrete examples.

12. Plan tasks appropriate to a student's range of challenge.

13. Give students choices that capitalize on their interests.

14. Individualize the pace of learning.

Allowing for different learning styles may contribute to students' basic skills achievement. If, in addition you want to *affect* learning styles to make students more flexible, the following suggestions are offered:

1. Assess your learning and teaching style. (Cornett's booklet describes general learning style instruments. Input from colleagues, supervisors, and students can add to your perception of your teaching style.)

2. Map the characteristics and the degree of flexibility in each student's learning style. (Knaak's booklet may be helpful in this activity.)

3. Help students understand their learning style through individual and group discussion.

4. Avoid reducing learning styles to merely another way to label students; always consider contextual factors in a given learning situation.

5. Attend workshops on developing varied teaching techniques.

6. Form a support group with other teachers who are interested in learning/teaching styles.

7. Become involved in your school's joint effort between vocational and academic teachers to share mutual skills.

8. Read more about learning and teaching styles—become a student of teaching. Explore this document's list of references; for example, Cornett's booklet or Guild and Garger's *Marching to Different Drummers* will provide a useful introduction.

9. Consult with special education teachers to learn their techniques.

10. Reinforce desired learning behaviors in your students in ways appropriate to their learning style preferences.

11. Involve students actively in learning.

12. Capitalize on teachable moments.

13. Teach to students' learning style strengths while working on their weaknesses.

14. Perhaps most important, act as a model for flexible learning styles by demonstrating the kind of problem-solving and basic skill application you desire in students.

(Answers to statements on the cover: fact, myth, myth, myth)

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Want to expand your teaching style further as a means of strengthening students' basic skills? Why not share with others your problems and successes! For further information about your school's joint effort plans, contact—

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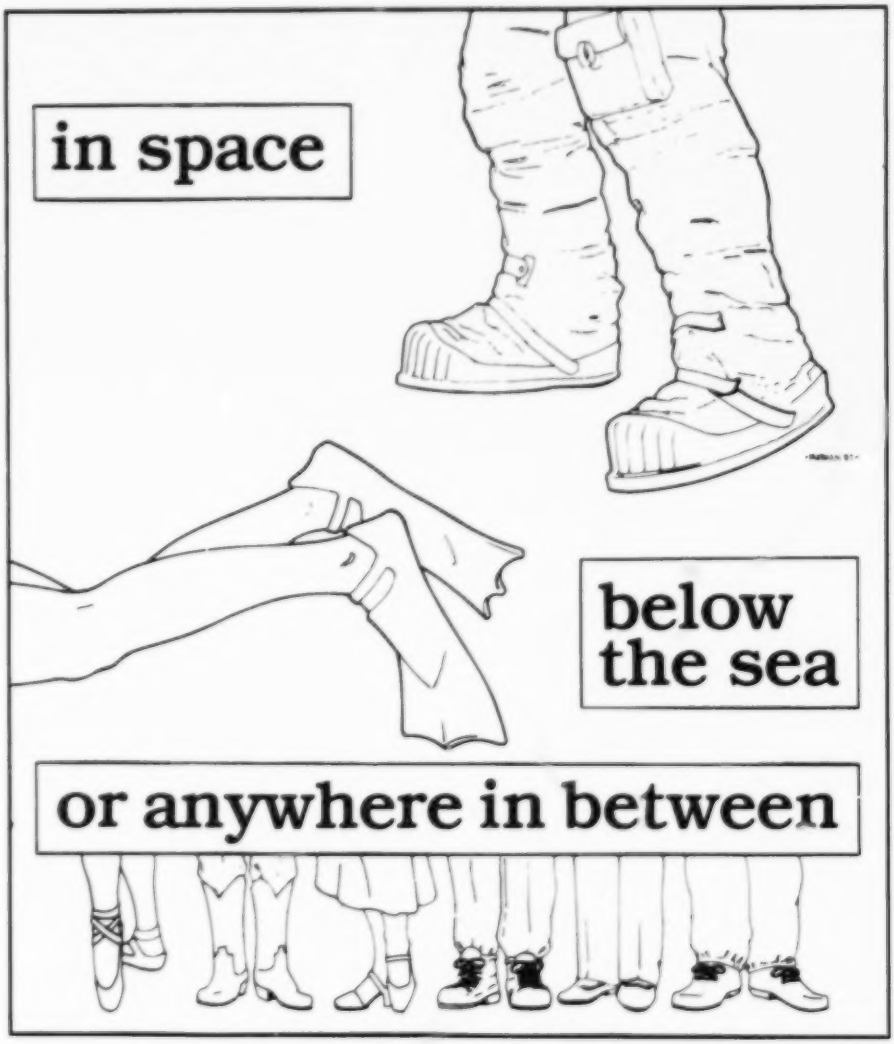

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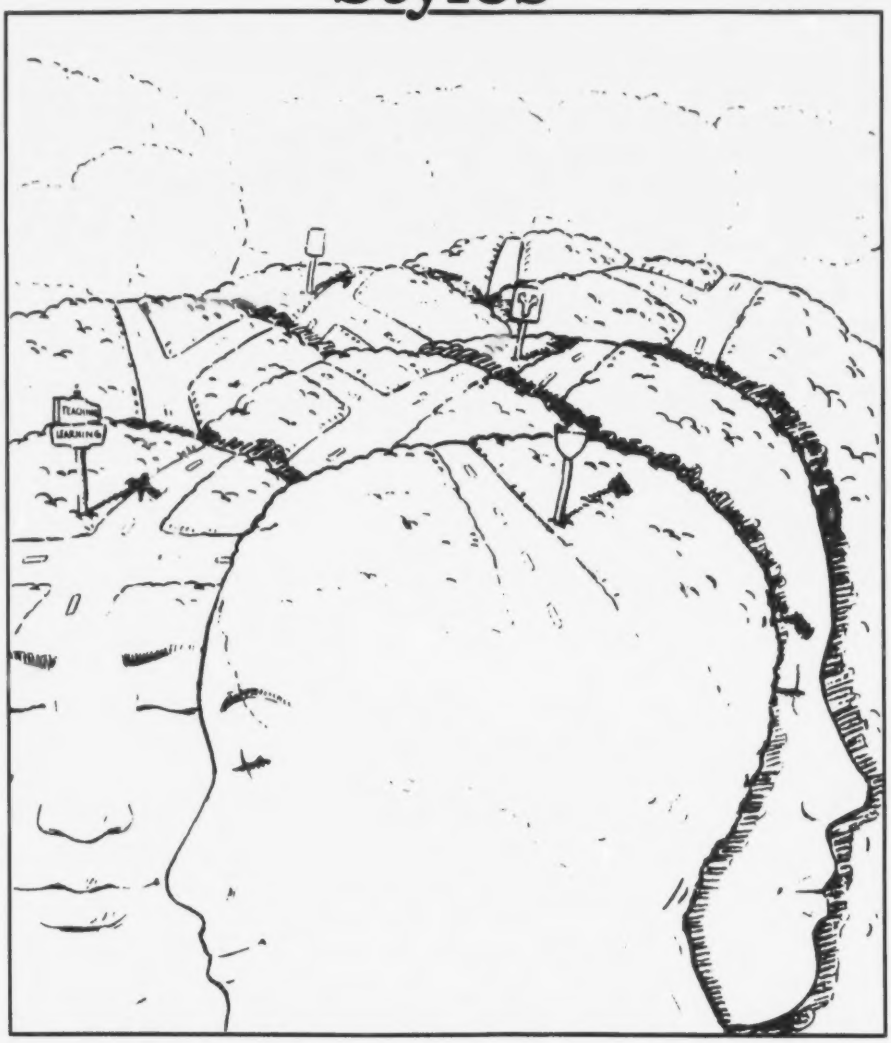

Discover Basic Skills

Basics
Bridging Vocational and Academic Skills

Support Roles:
Administrator (Guide #1)
Improving the Basic Skills of Vocational-Technical Students: An Administrator's Guide

This guide offers information and guidelines to help ***vocational administrators*** initiate program changes to strengthen basic skills. Because administrators are so important in making change happen, the guide speaks to administrators at various levels—department head, vocational principal, dean of vocational education, and state department supervisor, to name a few.

In addition to providing a background on the nature of basic skills in a vocational education context, the guide discusses types of basic skills programs, staffing structures, and effective instructional approaches. Other topics covered include program planning, implementation guidelines, and evaluation criteria. This **BASICS** information highlights the guide's recommendations for effective instructional leadership that have particular significance for a joint effort between vocational and academic teachers to strengthen basic skills.

Unless vocational administrators are actively involved in and committed to the success of basic skills programs, it is unlikely that a joint effort will have much impact on the problem. The degree of involvement will reflect the administrator's commitment to the program. *Awareness, knowledge and skill in several areas* are necessary for involvement to develop.

No longer are basic skills merely the three Rs or a standard set of universally applicable skills. Administrators should be aware of the vocational education view that basic skills are all the non-technical skills determined for a given program area to be basic to a student's success in that program and to entry-level employment in that field. The general academic principles may be the same, but the specific basic skills needed differ from program to program.

Administrators also need to be aware of various strategies being used to solve the basic skills problem in vocational education. Administrators must *understand* that strengthening basic skills requires everyone's support, at every level, across disciplines and departments. Since effective joint efforts are not easy to carry out, administrators' awareness of the need for their leadership and support is essential.

Vocational administrators must also be knowledgeable about the types of programs, staffing, and approaches that can be used to strengthen students' basic skills. This knowledge will enable administrators to analyze better the unique needs of their particular situation and select the most appropriate solution. Although remedial instruction, for example, may be appropriate for students

with extremely low basic skills, administrators should know that remedial programs tend to ignore occupational goals in setting competency standards. A joint effort, on the other hand, involves both vocational and academic teachers in determining basic skill goals to ensure relevance and accuracy of content.

Similarly, various staffing structures offer certain advantages and disadvantages. Administrators should know that the staffing structure easiest to administer may not yield as much student motivation or achievement as the staffing used in joint efforts. To make a joint effort work effectively, administrators also need to know the approaches, such as peer tutoring, cooperative teaching, and reinforcement of basic skills, that have proven successful.

The administrator of a program to strengthen basic skills wears several hats. These roles require various skills including organization, communication, and human relations. Overall, successful administrators of a joint effort must do three things well:

- *Plan effectively.*
  Effective planning must be systematic, cyclical, and cooperative. The kind of scattergun approach made possible by diversified funding is less effective and more costly than a broad-based, systematic approach such as joint effort. Central to effective planning is administrators' careful assessment of the extent of the problem and the climate for change, as well as their thorough examination of alternative solutions. Assessment considerations focus on several issues: student characteristics, access, diagnosis and monitoring, effect of setting, staffing decisions, staff development, facilities, equipment, materials, and funding. Considering all these issues is especially important to a joint effort because this approach is unconventional. Traditionally, academic and vocational teachers have often gone separate ways. A joint effort stands a better chance of succeeding if "all bases are covered."

- *Implement the program with sound leadership.*
  Administrators' work does not end with planning joint efforts. They must also provide leadership throughout the implementation in several ways:
  - Establish an administrative structure to facilitate change.
  - Foster schoolwide commitment and high expectations.
  - Provide leadership for effective teaching.
  - Encourage community support.
  - Build interdisciplinary cooperation.

  Providing leadership may require helping teachers, for example, address time-on-task. Also, virtually every successful implementation of basic skills programs requires parental and community support. Administrators who make parents and employers aware of a joint effort's focus on basic skills are likely to reap benefits in donated time, equipment, and finances.

- *Establish specific criteria for program evaluation.*
  Unfortunately, evaluation is a step that too often receives inadequate attention. Both formative and summative evaluation, as well as impact studies, are vital in establishing a new program such as a joint effort to strengthen basic skills. Administrators need this information to retain public support, justify applications for continued funding, and especially to ensure that the program meets its goals.

This guide from the Competency-Based Administrator Education (CBAE) module series gives specific information on each of the administrator support skills described above.

Basics
Bridging Vocational and Academic Skills

Support Roles:
Administrator (Guide #2)
Integration of Academic and Vocational-Technical Education: An Administrator's Guide

This guide provides ***vocational administrators*** with several vignettes of joint efforts between academic and vocational teachers to strengthen the basic skills of vocational students. Although not all the programs are fully realized, these models-in-process at various implementation stages provide a concrete backdrop for understanding the strategies and procedures for managing the change process that are discussed earlier in the guide.

Although written for vocational administrators, this guide offers all educational personnel a useful philosophical foundation from which to consider the merits of collaboration between vocational and academic teachers. The recent scrutiny of American schools has revealed strengths and weaknesses in both kinds of curriculum and instruction. Pooling vocational and academic colleagues' respective strengths can greatly enhance the quality of education for all students, especially vocational students for whom the lack of basic skills threatens employability and chances for fulfillment. This **BASICS** information outlines major strategies advocated in the guide for successful joint efforts to strengthen basic skills.

Administrators can develop effective plans for strengthening basic skills through a joint effort between vocational and academic teachers. These plans will have the best chance to succeed if administrators keep in mind three functions of an effective support role:

- Be enthusiastic and focus on the positive.
- Remember that change is a process, affecting many people.
- Back up your enthusiasm with both intrinsic and extrinsic forms of support.

It is important, for example, that administrators allow enough time for teachers to move through stages from uncertainty to acceptance of this innovation. Administrators can provide information and experiences at crucial intervals to facilitate the process. This support can take the form of a film, interview, handout, or site visit to a vocational school where joint effort is in use.

Administrative handling of a new joint effort is likely to vary, depending on state requirements, organizational structure of the school system, and the rapport and collaboration between vocational and academic staff. The steps discussed in this guide can be easily adapted to provide an

approach to joint effort that meets the needs of a particular school and its students. Three guiding principles can assist administrators in planning for joint effort:

- *Lay a foundation for the change and the need for the change.*
  Sound information is needed about state and local requirements governing teacher certification and scheduling practices. Community concerns about students' basic skill performance should be surveyed to determine and support the need for a joint effort. Testing and other information gathering will provide a reading of the achievement level of students' basic skills and the emphasis of current teaching and curriculum.

- *Conceptualize the nature and parameters of the change.*
  Once essential information is gathered, administrators should prepare a brief proposal documenting the need for joint effort. This paper can be shared with those whose support is needed in order to proceed. Monetary support may be needed as well as permission to proceed, but the enthusiasm and extent of broad-based support may be a greater determiner of success than funds.

- *Prepare for the change.*
  After administrators receive the approvals needed to launch a joint effort, they should prepare a more detailed proposal outlining plans for the change. Several questions should be addressed in this proposal, including—

  - *How will basic skills be integrated into the vocational curriculum?*
  - *What level of integration will be sought?*
  - *What curriculum materials will be required, and how will they be secured or developed?*

  Administrators also need to prepare people for the change that joint effort entails. This preparation involves orientation, seeking input, marketing the concept, securing enthusiastic support, and training. Seeking input can result in gaining support. Academic teachers may, for example, be concerned about their ability to relate their subject matter to occupational tasks. Both academic and vocational teachers may be concerned about the work and time required by a joint effort. It is necessary to address these inputs successfully to build support for the change.

This guide from the Competency-Based Administrator Education (CBAE) module series gives specific information on each of the topics described above.

Basics
Bridging Vocational and Academic Skills

Support Roles: Counselor Provide for the Basic Skills

This module is designed to help prepare ***counselors*** to perform essential tasks and fill the roles that commonly support a basic skills program. Addressed to professional and paraprofessional guidance program staff in a wide variety of educational and community settings, the module reflects the view that counselors have a critical role to play in strengthening basic skills—even though they are not so directly engaged in the effort as academic and vocational teachers.

The module's advocacy of "learning assistance counselors" fits the concept of joint efforts between vocational and academic teachers. This counseling concept emphasizes, for example, communication and a team approach, which are at the heart of a successful joint effort. Learning experiences in the module clearly define counselor roles and responsibilities related to basic skills by integrating theory and application. This **BASICS** information cites learning experiences in the same order as the module and describes ways in which counselors can contribute to a joint effort to strengthen basic skills.

Academic and vocational teachers engaged in a joint effort to strengthen basic skills will benefit from counselors' expertise in four areas.

- Planning
- Evaluating
- Facilitating
- Monitoring

Teachers may decide either to assess students' basic skills themselves or to have counselors do it. Critical to the process either way is that the assessment be carefully planned. Counselors have a number of sources to draw upon in this regard and can suggest procedures that are not only realistic and practical, but also grounded in a theoretically sound framework. Counselors also can offer astute judgments about testing instruments.

Counselors' knowledge of resources and services plus their communication and interpersonal skills make them excellent facilitators of a joint effort in two ways. First, they can mediate between vocational and academic teachers to enhance their mutual understanding and cooperation. Also, because of their roles as nonjudgmental sounding boards for students, counselors can help recruit students to the basic skills program and reinforce their commitment over time.

Both academic and vocational teachers involved in a joint effort to strengthen basic skills need an impartial monitoring mechanism to follow students' short-term and long-term progress and determine the program's overall effectiveness. Counselors are a natural source of information since they receive feedback from students, parents, and employers. Counselors provide a range of monitoring services from organizing parent conferences to consulting directly with teachers on students' learning disabilities.

Working collaboratively in support of both academic and vocational teachers, counselors can enhance the joint effort through providing the following specific services:

- *Identify the major guiding principles in order to establish a program for testing and assessing the basic skills of students.*
  Teachers may need counselors' assistance in setting assessment priorities and test specifications for students. Teachers may also need assistance in relating students' tested capacity to their assessed treatment needs. Most importantly, counselors can keep track of the overall assessment design so that the joint effort is flexible and responsive to institutional change and individual needs.

- *Identify specific testing instruments for use in determining the basic skills of students.*
  Counselors have at their fingertips a range of sources for standardized tests. They can select instruments or provide guidelines to help teachers select and use tests. How teachers interpret, use, and communicate test results is pivotal to the success of the joint effort. Counselors can provide the necessary knowledge of test administration and scoring procedures, norms, reliability, and validity. They are also skillful in conveying to students the exact reasons for selecting each test, explaining what the results are, what they mean, and how they will be used.

- *Describe the major sources for acquiring learning materials for use by students in the basic skills area.*
  Counselors have access to both commercial and noncommercial sources of appropriate instructional materials. If counselors can acquire materials especially for individual students' unique needs, academic and vocational teachers will have more time to devote to integrating the vocational curriculum and academic skill content.

- *Outline a plan for facilitating the basic skills learning strategies of students.*
  Counselors can help teachers utilize and work with appropriate support personnel on the teaching team. Counselors should assist teachers in the joint effort, for example, by referring special needs students and potential dropouts to appropriate services. Counselors can also handle arrangements for peer tutoring.

- *Designate specific approaches to use in monitoring basic skill learning strategies of students.*
  Counselors can provide valuable insight for writing individualized academic development plans through their familiarity with students' concerns, aspirations, and special needs. They also can provide teachers with important information regarding student attendance records and employer-based basic skill requirements.

The Competency-Based Career Guidance (CBCG) module that follows gives specific information on each of the counselor services described above.

Basics
Bridging Vocational and Academic Skills

Module M-1:
Assist Students in Achieving Basic Reading Skills

This module is designed to give practical assistance to vocational and academic teachers for developing instruction to meet students' *basic reading* needs. Although the module as written speaks directly to vocational teachers, the content is applicable to both vocational and academic teachers. Indeed, the ideas presented are ones that can be applied most effectively through a joint effort of vocational and academic teachers to strengthen students' basic reading skills. This **BASICS** information about the module shows how teachers can work together on these ideas. The information is organized in the same manner as the module for ease of use.

Teachers can prepare students for basic reading as follows:

- Create an appropriate environment
- Assess students' reading needs

An appropriate environment for reading can be fostered in academic and vocational classrooms. Vocational and academic teachers need to reinforce the message that reading is an essential skill for any job that students will hold. The academic teacher in this instance is likely to be an English teacher. Vocational teachers can provide the English teacher with some examples of the kinds of on-the-job reading that will be required of students in their specific vocational programs. The English teacher can use those examples to set a positive motivational tone for the reading activities for students in vocational programs. Additional reinforcement comes for the student when the vocational teachers reflect that same tone and convey the same message as these reading examples arise in the vocational context.

Assessment of students' reading needs involves identifying current reading level and determining the level and type of skills needed in the occupation for which the students are training. The academic (English) teacher can, through tests and in-class observation, evaluate a student's current skills. The vocational teacher is in a position to know or to find out the occupational requirements. Then both can contribute this information to determine whether, and in what areas, the student falls short of the requirements.

Preparing to help students in these ways, vocational and academic teachers can often use specific improvement techniques and strategies like the following:

- *Teach technical vocabulary.*
  Technical terms will be used in the vocational classroom, but it help students if they already have some familiarity with these terms. Academic teachers can use these terms in vocabulary exercises ahead of time so that when they appear in the vocational context, they will convey meaning rather than be stumbling blocks.

- *Provide practical reading knowledge and tips.*
  Many occupations have some unique ways of using language and formatting information. For example, a food service worker will deal with recipes of a fairly standard format. The word "fork" will probably refer to tableware whereas other occupations define "fork" as a type of freight lift or a branch in a river. Vocational and academic teachers can supply practical tips and clues in order to pave the way for students to read more easily.

- *Use reading games.*
  Games can be used to lighten the atmosphere and add a fun dimension to both vocational and academic classwork. If the games are devised jointly by the vocational and academic teachers to incorporate aspects of both courses, then reading and vocational learning can take place at the same time.

- *Introduce and supplement reading assignments.*
  An introduction to a reading assignment includes some information about what is to be read and why it is to be read. The vocational teacher can incorporate some information of an academic nature and the academic teacher can likewise include vocational background material. Thus, both are able to emphasize applied learning as they present the assignment.

- *Individualize reading help.*
  Because each student's current situation and future needs are unique to some degree, both vocational and academic teachers need to be alert for indications that an individual needs reading help. It is helpful if the two teachers can plan together the best way to offer assistance.

- *Provide practice and reinforcement.*
  At the secondary level, a great deal of practice and reinforcement is needed for skills to be mastered and retained. The positive effects of such practice and reinforcement are magnified if they also integrate academic and vocational skills. Thus, teachers should plan for cross-reinforcement. For example, if the English teacher is discussing interpretation of written material, then the trade and industrial teacher should plan to work with students on how to interpret a maintenance manual.

Module M-1: *Assist Students in Achieving Basic Reading Skills*, from the Performance-Based Teacher Education (PBTE) module series, gives specific information on each of the topics discussed above.

Basics
Bridging Vocational and Academic Skills

Module M-2:
Assist Students in Developing Technical Reading Skills

This module is designed to give practical assistance to vocational and academic teachers for developing instruction to meet students' *technical reading* needs. Although the module as written speaks directly to vocational teachers, the content is applicable to both vocational and academic teachers. Indeed, the ideas presented are ones that can be applied most effectively through a joint effort of vocational and academic teachers to strengthen students' basic reading skills. This **BASICS** information about the module shows how teachers can work together on these ideas. The information is organized in the same manner as the module for ease of use.

Planning to assist students in developing technical reading skills involves the following:

- Selecting written materials for instruction that are appropriate for the occupational area and for the students' needs and abilities
- Developing activities to integrate technical reading with occupational skills training

As students develop reading skills beyond the basic level, they become more ready to focus on technical content. And as they develop technical reading skills, they will be learning not only content, but also how to learn and how to work in auto mechanics, cosmetology, or any given field. Technical reading skills are tools that will be used on a continuing basis on the job, and vocational and academic teachers need to reinforce this idea with students.

Different vocational programs have different reading requirements. Each has some of its own vocabulary, distinctive requirements for comprehension, and unique materials. Some occupations (e.g., tool and die making) require that workers be able to read complex tables. Other occupations (e.g., nursing) require that workers know a great many difficult technical terms.

Both vocational and academic teachers need tc be involved in *selecting written materials for instruction that are appropriate for the occupational area*. The teachers should review both the vocational course competencies and the occupational and task analyses from which the course competencies are derived. Technical reading aspects of each task can be identified; then teachers can select reading materials generally applicable to the field but also having specific task relevance. (Further information on this topic can be found in **BASICS'** *Instructional Materials Development*.)

The same written materials can be used with a content focus in a vocational class and with a reading focus in an English class. It is effective to schedule related work in each course at the same time, or close to the same time. For example, if students in an electronics course are replacing a part and this involves interpretation of specifications and descriptions in a parts

catalog, they will see as relevant and helpful an English assignment using the same technical vocabulary and perhaps the catalog format. A phrase such as "compatible with high volume circuit board assembly processes" can be interpreted more easily if both vocational and English teachers are assisting.

As the teachers select materials, the vocational teacher can review them for technical content, whereas the English teacher can review them for vocabulary, organization, and types of reading skills needed. In addition, the English teacher can check that materials are at a reading level suitable for students' skills or can suggest adaptations of the materials for different reading levels.

A most effective aproach to *developing specific activities to integrate the teaching of technical reading with occupational skills training* is for vocational and academic teachers to work together. The vocational teacher can determine the occupational meaning and validity of material for the activities, and the English teacher can provide information about the reading principles that need to be taught. They can decide jointly on the best way to help students practice in both areas.

Of the many important technical reading skills, three are emphasized as essential to students in vocational programs. Information is provided on developing activities for the following:

- *Vocabulary*
  In developing vocabulary exercises, use of the following factors should be considered: context clues, analysis of structure, and clues from previous knowledge. Analysis of written material can be facilitated by a vocabulary analysis chart provided in the module.

- *Comprehension*
  The complex area of comprehension can be approached instructionally with these factors in mind—the range of skills necessary for comprehension, levels of comprehension, reading for main ideas, reading for organization, and recognition of patterns as an aid.

  An example of an exercise involving reading for organization is to ask students to reduce a narrative description of a vocational task to a series of steps in correct sequence. To do this, students need to recognize signal words (e.g., then, next) and to separate out each discrete action.

- *Interpretation of graphics*
  Some of the student's need for skill in interpretation of graphics derives from the fact that most instructional materials in vocational programs now make extensive use of graphic material to reinforce and clarify concepts and to make the materials appear more interesting and attractive. A second aspect of the need is that students will encounter certain types of graphics on the job in manuals, reports, trade journals, etc. The types of graphics used most commonly include graphics, charts, and illustrations.

Module M-2: *Assist Students in Developing Technical Reading Skills*, from the Performance-Based Teacher Education (PBTE) module series, gives information on the topics discussed above.

Basics
Bridging Vocational and Academic Skills

Module M-3:
Assist Students in Improving Their Writing Skills

This module is designed to give practical assistance to vocational and academic teachers for developing instruction to meet students' needs for *writing skills.* Although the module as written speaks directly to vocational teachers, the content is applicable to both vocational and academic teachers. Indeed, the ideas presented are ones that can be applied most effectively through a joint effort of vocational and academic teachers to strengthen students' basic reading skills. This **BASICS** information about the module shows how teachers can work together on these ideas. The information is organized in the same manner as the module for ease of use.

Most people are asked almost daily to do some type of writing; writing skills are very important for employability. Both vocational and academic teachers can help students by reinforcing this message to motivate them to work on their writing skills. Vocational teachers can inform students about the kinds of writing that will be expected on the jobs they are likely to hold.

Students need to know *what* basic writing skills to work on, such as the following:

- Spell correctly
- Capitalize correctly
- Identify appropriate form and style
- Choose appropriate words
- Use correct grammar
- Punctuate properly
- Review written work

The academic teacher, probably an English teacher in this case, will be dealing with all these concepts in class and will increase the relevance of the instruction by using examples that students can recognize as coming from their own vocational area. Vocational teachers can assist by providing such illustrations. For example, a welding instructor, whose students will relate to information about metal bars, might supply the illustration of the difference one hyphen can make in whether a business orders 1,000-foot-long bars or 1,000 foot-long bars.

As teachers prepare to help students improve their writing skills, they need specifically to—

- identify occupational requirements and
- identify students' writing needs.

Identification of occupational requirements can be systematically accomplished by the vocational and academic teachers jointly reviewing the vocational course competencies and the occupational and task analyses from which the course competencies are derived. The writing aspects

of each task can be identified along with the specific writing skill required. For example, one task of a medical assistant is to receive and record laboratory test results. Choosing appropriate words for clarity and accuracy is required to perform the task successfully. (Further information on developing a cross-correlation of vocational and academic skills can be found in BASICS' *Instructional Materials Development*.)

Identification of students' writing needs involves assessment of students' levels of skill in writing. In many English courses, the English teacher evaluates students' writing skills on a routine basis and is therefore in a good position to identify specific weaknesses. Sharing this information with the vocational teacher, will alert him/her to opportunities that arise in performing vocational tasks to help the student work on eliminating those weaknesses. (Related information can be found in **BASICS'** *Technique for Individualization: The Academic Development Plan*.)

Vocational and English teachers can assist each other in planning for techniques to help students improve their writing skills, such as the following:

- *Provide models*
  Teachers can cooperate on occupationally relevant writing models to be used in both English and vocational classrooms. For example, if students will be writing memos, a sample of a well-written memo in proper format can be displayed in both classrooms.

- *Provide vocationally related writing assignments*
  If the vocational and English teachers have worked out a systematic cross-correlation of their course tasks, it is particularly effective to schedule related work in each course at the same time, or close to the same time. If the students in an appliance repair course are working with equipment manuals and are assigned the task of writing clear directions for a manual in English class, they will see the assignment as relevant. It is difficult to manage a complete correspondence of tasks in scheduling coursework, but it is almost always feasible for the topic of a writing assignment in English to be vocationally related. The vocational teacher can supply a list of possible topics for the English teacher's use.

- *Individualize writing instruction*
  A student's writing difficulties may be quite individualized and may require individual instruction. Vocational and English teachers can plan together how to meet these individual needs.

- *Correct students' writing errors.*
  Students improve more quickly with feedback on how they have improved and what areas still need work. They expect feedback on their writing in an English class; they may be a little surprised to get such feedback in their vocational classes as well. The additional feedback will help students improve their writing and will reinforce the integrated nature of vocational and academic learning. An effective method of providing dual feedback is for English teachers to grade writing assignments (in both vocational and English classes) from a writing skills perspective and vocational teachers to grade them on the basis of content.

Module M-3: *Assist Students in Improving Their Writing Skills*, from the Performance-Based Teacher Education (PBTE) module series, gives specific information on each of the topics discussed above.

Basics
Bridging Vocational and Academic Skills

Module M-4:
Assist Students in Improving Their Oral Communication Skills

This module is designed to give practical assistance to vocational and academic teachers for developing instruction to meet students' needs for *oral communication skills*. Although the module as written speaks directly to vocational teachers, the content is applicable to both vocational and academic teachers. Indeed, the ideas presented are ones that can be applied most effectively through a joint effort of vocational and academic teachers to strengthen students' basic reading skills. This **BASICS** information about the module shows how teachers can work together on these ideas. The information is organized in the same manner as the module for ease of use.

Oral communication is central to human interaction. In fact, most people—including students—spend the majority of their communication time speaking and listening, rather than reading and writing. Moreover, a good foundation in speaking and listening has positive effects on students' reading and writing skills.

Vocational and academic teachers need to reinforce this message with students to motivate them to work on oral communication. Teachers must also provide strong evidence of the need for effective oral communication on the job. Students should be reminded that their success on any job will depend on oral communication with supervisors, peers, and customers.

Many students tend to equate oral communication with speaking, so it is important for vocational and academic teachers to stress that listening is equally important and that nonverbal behavior deserves their attention as well. Following instructions delivered orally is as important as being able to give clear instructions to others. Thus it is important for both vocational and academic teachers to *understand*, and to help students to understand, *the full range of oral communication skills*.

All teachers, vocational and academic, depend on oral communication as a primary mode of instructing their students. They are role models of appropriate oral communication skills, and so it behooves them to *assess their own skills*. Vocational and academic teachers can help each other to make these assessments by giving cooperative feedback to each other on speaking, listening,

and nonverbal behavior. Another person can make a more objective assessment than one can for oneself. The additional benefit of pairing vocational and academic teachers is that they are more likely to pinpoint strengths and weaknesses for each other. With different backgrounds, they are less likely to fill in or revise automatically what is left unsaid or said unclearly.

Before teachers can help students improve their oral communication skills, they need to *assess students' present skills levels* and relate that assessment to the skills that will be needed in the job. Vocational and academic teachers should pool their observations of a student's skills, and then the vocational teacher can compare these to occupational requirements. [See **BASICS'** *Technique for Individualization: the Academic Development Plan (ADP).*]

Sudents are more likely to improve their oral communication skills if teachers are able to *create an appropriate environment*. Some of the elements to be aware of are as follows:

- *Being sensitive*
  Students may be anxious about their oral communications. Vocational and academic teachers can increase their awareness of individual students' anxieties by sharing observations.

- *Motivating students*
  The importance of relevance as a motivating factor has already been discussed. Reinforcement is also a meaningful motivator. Vocational and academic teachers can develop a joint reward system. For example, they can choose a student with strong oral communication skills as a peer tutor. (See **BASICS'** *Technique for Remediation: Peer Tutoring.*)

- *Accommodating individual differences*
  Teachers need to accommodate differing student skill levels, career goals, and learning styles. These factors should be considered, for example, in critiquing oral presentations. The vocational teacher can meet with the individual student to give feedback on the content related to that individual's career goals. The academic teacher can do the same with emphasis on presentation.

By using appropriate instructional techniques, vocational and academic teachers can significantly influence the development of their students' oral communication skills. Examples of techiques that are helpful in this area include the following:

- *Oral presentations*
  As noted, these can be critiqued by both teachers. It is possible also to ask other students in the classes to offer feedback both on the basis of content and of presentation.

- *Role-plays, simulations, and real life situations*
  These techniques provide excellent opportunities for students to practice oral skills in a situation as close to on-the-job as possible. They also promote the use of applied learning and help students to integrate their vocational and academic skills. Here too the critiques can be done with a dual perspective.

- *Guest speakers and media*
  Although a speaker or a film may be presented primarily for content instruction in a vocational area, an additional instructional facet can be added by asking students to be aware of how well the content is being presented from an oral communication viewpoint.

Module M-4: *Assist Students in Improving Their Oral Communication Skills*, from the Performance-Based Teacher Education (PBTE) module series, gives specific information on each of the topics discussed above.

Basics
Bridging Vocational and Academic Skills

Module M-5:
Assist Students in Improving Their Math Skills

This module is designed to give practical assistance to vocational and academic teachers for developing instruction to meet students' needs for *math skills.* Although the module as written speaks directly to vocational teachers, the content is applicable to both vocational and academic teachers. Indeed, the ideas presented are ones that can be applied most effectively through a joint effort of vocational and academic teachers to strengthen students' basic reading skills. This **BASICS** information about the module shows how teachers can work together on these ideas. The information is organized in the same manner as the module for ease of use.

Assisting students in improving their math skills is a process involving preparation (during which teachers can make the necessary assessments) and actual work with the students. Preparation to assist students depends on important contributions of information from both vocational and academic teachers. They will need to assess the following:

- *What math skills will students need in the vocational program and ultimately on the job?*
  Using both the vocational course competencies and the occupational and task analyses from which the course competencies are derived, the vocational teacher can identify the skills students will need to perform vocational tasks. The academic teacher (in this case, a math teacher) can identify the math concepts in the form in which they would be found in an academically organized course as well as by level needed. (Further information on developing a cross-correlation of vocational and academic skills can be found in **BASICS'** *Instructional Materials Development.*)

- *What are students' present levels of skills in math?*
  The math teacher can, through both formalized tests and in-class observation, evaluate a student's current knowledge of math concepts. However, unless the math teacher uses an applied learning mode of instruction, the student's performance in the math classroom may not indicate his/her skills in solving problems of a work world nature. The math or vocational teacher can provide an assessment of the student's math performance from observation in the vocational classroom. If a student is testing at high levels in math but is unable to make application of the math concepts, that student's area of weakness can be specifically addressed in both math and vocational classes. (Related information can be found in **BASICS'** *Technique for Individualization: The Academic Development Plan.*)

- *What is their own readiness to teach the skills?*
  The math teacher may be able to support the vocational teacher's understanding of math concepts underlying the vocational math. The vocational teacher can provide the math teacher with knowledge about meaningful applications of the math concepts.

- *What's the adequacy of the instructional materials?*
  Ideally, the instructional materials used in the math class should contain applied learning activities; the materials used in the vocational class should provide math support at relevant points. Both teachers can work together on adapting or supplementing materials to better meet these objectives.

Working with students after making preparations involves these helpful general strategies:

- *Create a positive atmosphere.*
  Both vocational and math teachers can foster and then reinforce a "can do" attitude. A positive tone in the math class will spill over into the vocational class and vice versa.

- *Individualize instruction.*
  Effective instruction must relate to an individual student's learning style and capitalize on the student's interests. Vocational teachers often teach in individualized competency-based programs and can lend math teachers some assistance on individualization. Math teachers can then begin to develop competency-based activities for difficult concepts, to meet the individual needs of students.

- *Teach math in the context of occupational skill development.*
  Students can master abstract principles more easily in the concrete occupational context.

- *Use visual and tactile means to reinforce math concepts.*
  Providing students a concrete "handle" on an idea is helpful, but giving concrete expression to an abstract idea is not always easy on an independent basis. Math and vocational teachers can work productively as a team to determine the "handles."

- *Provide practical math activities.*
  This strategy helps students develop problem-solving skills by giving them practice in how to approach problem solution. Vocational and math teachers can share in planning these activities. They can also plan to present a standard approach for problem-solving.

Teachers can share information about appropriate techniques for improving specific math skills, such as ways to—

- pinpoint difficulties,
- explain mathematical concepts,
- work on common problem areas, and
- provide various types of math practice activities.

For example, a common mathematical error on division of fractions is not inverting before multiplying. Division of fractions is used frequently in carpentry. It is helpful for the math and carpentry teachers to communicate about this difficulty and be ready to avert the problem by timely intervention.

Module M-5: *Assist Students in Improving Their Math Skills*, from the Performance-Based Teacher Education (PBTE) module series, gives specific information on each of the topics discussed above.

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